Figure 1A : General description of the polyphage principle

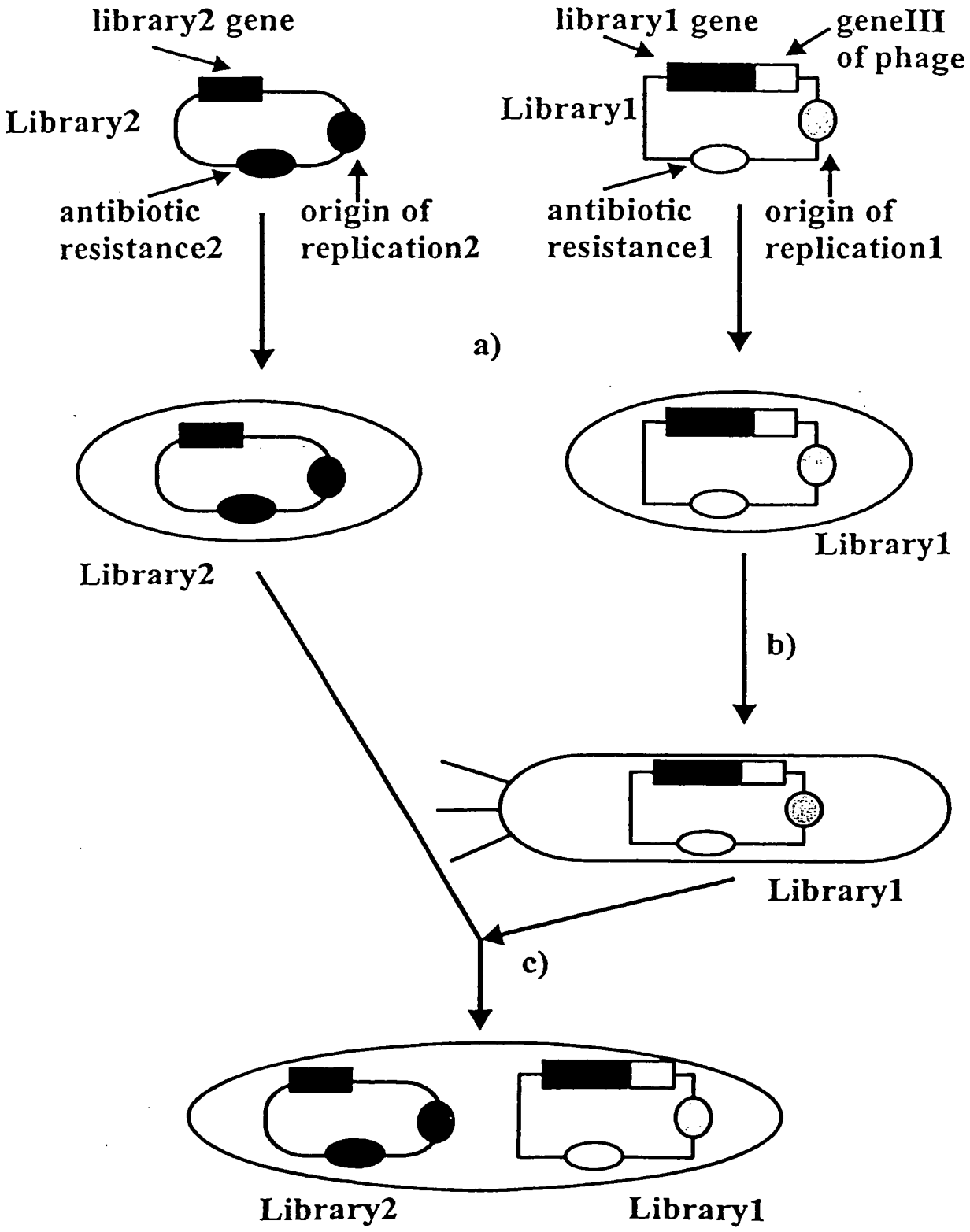

Figure 1B: General description of the polyphage principle (cont.)

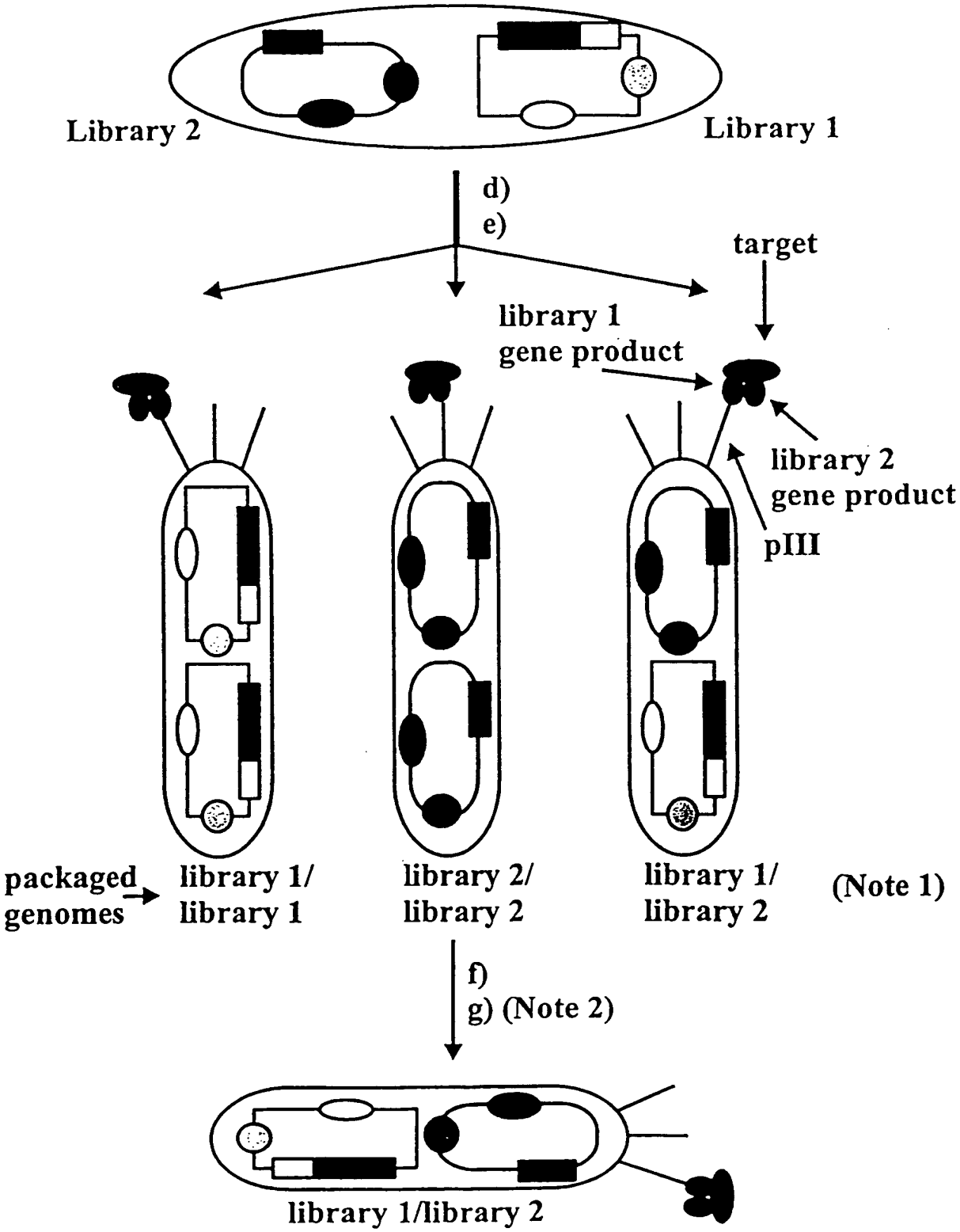

Figure 2A

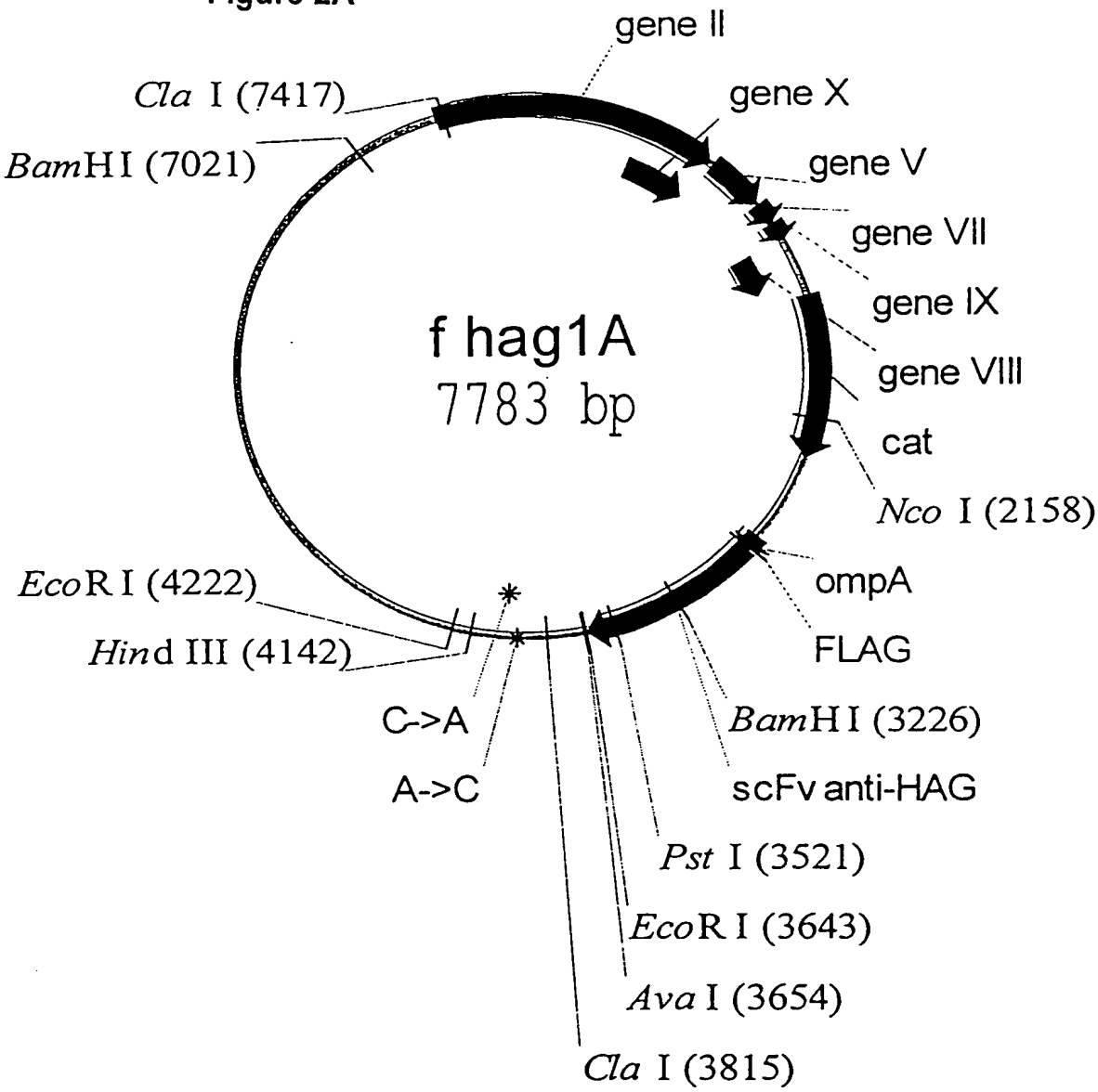
gene II
Cla I (7417)
gene X
BamHI (7021)
gene V
gene VII
gene IX
f hag1A
7783 bp
gene VIII
cat
Nco I (2158)
EcoR I (4222)
ompA
Hind III (4142)
FLAG
C->A
BamH I (3226)
A->C
scFv anti-HAG
Pst I (3521)
EcoR I (3643)
Ava I (3654)
Cla I (3815)

Figure 2B


```
   1  AACGCTACTA CCATTAGTAG AATTGATGCC ACCTTTTCAG CTCGCGCCCC
      TTGCGATGAT GGTAATCATC TTAACTACGG TGGAAAAGTC GAGCGCGGGG

  51  AAATGAAAAT ATAGCTAAAC AGGTTATTGA CCATTTGCGA AATGTATCTA
      TTTACTTTTA TATCGATTTG TCCAATAACT GGTAAACGCT TTACATAGAT

 101  ATGGTCAAAC TAAATCTACT CGTTCGCAGA ATTGGGAATC AACTGTTACA
      TACCAGTTTG ATTTAGATGA GCAAGCGTCT TAACCCTTAG TTGACAATGT

 151  TGGAATGAAA CTTCCAGACA CCGTACTTTA GTTGCATATT TAAAACATGT
      ACCTTACTTT GAAGGTCTGT GGCATGAAAT CAACGTATAA ATTTTGTACA

 201  TGAACTACAG CACCAGATTC AGCAATTAAG CTCTAAGCCA TCCGCAAAAA
      ACTTGATGTC GTGGTCTAAG TCGTTAATTC GAGATTCGGT AGGCGTTTTT

 251  TGACCTCTTA TCAAAAGGAG CAATTAAAGG TACTGTCTAA TCCTGACCTG
      ACTGGAGAAT AGTTTTCCTC GTTAATTTCC ATGACAGATT AGGACTGGAC

 301  TTGGAATTTG CTTCCGGTCT GGTTCGCTTT GAGGCTCGAA TTGAAACGCG
      AACCTTAAAC GAAGGCCAGA CCAAGCGAAA CTCCGAGCTT AACTTTGCGC

 351  ATATTTGAAG TCTTTCGGGC TTCCTCTTAA TCTTTTTGAT GCAATTCGCT
      TATAAACTTC AGAAAGCCCG AAGGAGAATT AGAAAAACTA CGTTAAGCGA

 401  TTGCTTCTGA CTATAATAGA CAGGGTAAAG ACCTGATTTT TGATTTATGG
      AACGAAGACT GATATTATCT GTCCCATTTC TGGACTAAAA ACTAAATACC

 451  TCATTCTCGT TTTCTGAACT GTTTAAAGCA TTTGAGGGGG ATTCAATGAA
      AGTAAGAGCA AAAGACTTGA CAAATTTCGT AAACTCCCCC TAAGTTACTT

 501  TATTTATGAC GATTCCGCAG TATTGGACGC TATCCAGTCT AAACATTTTA
      ATAAATACTG CTAAGGCGTC ATAACCTGCG ATAGGTCAGA TTTGTAAAAT

 551  CAATTACCCC CTCTGGCAAA ACTTCCTTTG CAAAAGCCTC TCGCTATTTT
      GTTAATGGGG GAGACCGTTT TGAAGGAAAC GTTTTCGGAG AGCGATAAAA

 601  GGTTTCTATC GTCGTCTGGT TAATGAGGGT TATGATAGTG TTGCTCTTAC
      CCAAAGATAG CAGCAGACCA ATTACTCCCA ATACTATCAC AACGAGAATG

 651  CATGCCTCGT AATTCCTTTT GGCGTTATGT ATCTGCATTA GTTGAGTGTG
      GTACGGAGCA TTAAGGAAAA CCGCAATACA TAGACGTAAT CAACTCACAC

 701  GTATTCCTAA ATCTCAATTG ATGAATCTTT CCACCTGTAA TAATGTTGTT
      CATAAGGATT TAGAGTTAAC TACTTAGAAA GGTGGACATT ATTACAACAA

 751  CCGTTAGTTC GTTTTATTAA CGTAGATTTT TCCTCCCAAC GTCCTGACTG
      GGCAATCAAG CAAAATAATT GCATCTAAAA AGGAGGGTTG CAGGACTGAC

 801  GTATAATGAG CCAGTTCTTA AAATCGCATA AGGTAATTCA AAATGATTAA
      CATATTACTC GGTCAAGAAT TTTAGCGTAT TCCATTAAGT TTTACTAATT
```

Figure 2C


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 851  AGTTGAAATT AAACCGTCTC AAGCGCAATT TACTACCCGT TCTGGTGTTT
      TCAACTTTAA TTTGGCAGAG TTCGCGTTAA ATGATGGGCA AGACCACAAA

 901  CTCGTCAGGG CAAGCCTTAT TCACTGAATG AGCAGCTTTG TTACGTTGAT
      GAGCAGTCCC GTTCGGAATA AGTGACTTAC TCGTCGAAAC AATGCAACTA

 951  TTGGGTAATG AATATCCGGT GCTTGTCAAG ATTACTCTCG ACGAAGGTCA
      AACCCATTAC TTATAGGCCA CGAACAGTTC TAATGAGAGC TGCTTCCAGT

1001  GCCAGCGTAT GCGCCTGGTC TGTACACCGT GCATCTGTCC TCGTTCAAAG
      CGGTCGCATA CGCGGACCAG ACATGTGGCA CGTAGACAGG AGCAAGTTTC

1051  TTGGTCAGTT CGGTTCTCTT ATGATTGACC GTCTGCGCCT CGTTCCGGCT
      AACCAGTCAA GCCAAGAGAA TACTAACTGG CAGACGCGGA GCAAGGCCGA

1101  AAGTAACATG GAGCAGGTCG CGGATTTCGA CACAATTTAT CAGGCGATGA
      TTCATTGTAC CTCGTCCAGC GCCTAAAGCT GTGTTAAATA GTCCGCTACT

1151  TACAAATCTC CGTTGTACTT TGTTTCGCGC TTGGTATAAT CGCTGGGGGT
      ATGTTTAGAG GCAACATGAA ACAAAGCGCG AACCATATTA GCGACCCCCA

1201  CAAAGATGAG TGTTTTAGTG TATTCTTTCG CCTCTTTCGT TTTAGGTTGG
      GTTTCTACTC ACAAAATCAC ATAAGAAAGC GGAGAAAGCA AAATCCAACC

1251  TGCCTTCGTA GTGGCATTAC GTATTTTACC CGTTTAATGG AAACTTCCTC
      ACGGAAGCAT CACCGTAATG CATAAAATGG GCAAATTACC TTTGAAGGAG

1301  ATGCGTAAGT CTTTAGTCCT CAAAGCCTCC GTAGCCGTTG CTACCCTCGT
      TACGCATTCA GAAATCAGGA GTTTCGGAGG CATCGGCAAC GATGGGAGCA

1351  TCCGATGCTG TCTTTCGCTG CTGAGGGTGA CGATCCCGCA AAAGCGGCCT
      AGGCTACGAC AGAAAGCGAC GACTCCCACT GCTAGGGCGT TTTCGCCGGA

1401  TTGACTCCCT GCAAGCCTCA GCGACCGAAT ATATCGGTTA TGCGTGGGCG
      AACTGAGGGA CGTTCGGAGT CGCTGGCTTA TATAGCCAAT ACGCACCCGC

1451  ATGGTTGTTG TCATTGTCGG CGCAACTATC GGTATCAAGC TGTTTAAGAA
      TACCAACAAC AGTAACAGCC GCGTTGATAG CCATAGTTCG ACAAATTCTT

1501  ATTCACCTCG AAAGCAAGCT GATAAAGGAG GTTTCTCGAT CGAGACGTTN
      TAAGTGGAGC TTTCGTTCGA CTATTTCCTC CAAAGAGCTA GCTCTGCAAN

1551  NNNGAGGTTC CAACTTTCAC CATAATGAAA TAAGATCACT ACCGGGCGTA
      NNNCTCCAAG GTTGAAAGTG GTATTACTTT ATTCTAGTGA TGGCCCGCAT

1601  TTTTTTGAGT TATCGAGATT TTCAGGAGCT AAGGAAGCTA AAATGGAGAA
      AAAAAACTCA ATAGCTCTAA AAGTCCTCGA TTCCTTCGAT TTTACCTCTT

1651  AAAAATCACT GGATATACCA CCGTTGATAT ATCCCAATGG CATCGTAAAG
      TTTTTAGTGA CCTATATGGT GGCAACTATA TAGGGTTACC GTAGCATTTC
```

Figure 2D


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1701  AACATTTTGA GGCATTTCAG TCAGTTGCTC AATGTACCTA TAACCAGACC
      TTGTAAAACT CCGTAAAGTC AGTCAACGAG TTACATGGAT ATTGGTCTGG

1751  GTTCAGCTGG ATATTACGGC CTTTTTAAAG ACCGTAAAGA AAAATAAGCA
      CAAGTCGACC TATAATGCCG GAAAAATTTC TGGCATTTCT TTTTATTCGT

1801  CAAGTTTTAT CCGGCCTTTA TTCACATTCT TGCCCGCCTG ATGAATGCTC
      GTTCAAAATA GGCCGGAAAT AAGTGTAAGA ACGGGCGGAC TACTTACGAG

1851  ATCCGGAGTT CCGTATGGCA ATGAAAGACG GTGAGCTGGT GATATGGGAT
      TAGGCCTCAA GGCATACCGT TACTTTCTGC CACTCGACCA CTATACCCTA

1901  AGTGTTCACC CTTGTTACAC CGTTTTCCAT GAGCAAACTG AAACGTTTTC
      TCACAAGTGG GAACAATGTG GCAAAAGGTA CTCGTTTGAC TTTGCAAAAG

1951  ATCGCTCTGG AGTGAATACC ACGACGATTT CCGGCAGTTT CTACACATAT
      TAGCGAGACC TCACTTATGG TGCTGCTAAA GGCCGTCAAA GATGTGTATA

2001  ATTCGCAAGA TGTGGCGTGT TACGGTGAAA ACCTGGCCTA TTTCCCTAAA
      TAAGCGTTCT ACACCGCACA ATGCCACTTT TGGACCGGAT AAAGGGATTT

2051  GGGTTTATTG AGAATATGTT TTTCGTCTCA GCCAATCCCT GGGTGAGTTT
      CCCAAATAAC TCTTATACAA AAAGCAGAGT CGGTTAGGGA CCCACTCAAA

2101  CACCAGTTTT GATTTAAACG TGGCCAATAT GGACAACTTC TTCGCCCCCG
      GTGGTCAAAA CTAAATTTGC ACCGGTTATA CCTGTTGAAG AAGCGGGGGC

            NcoI
           -------
2151  TTTTCACCAT GGGCAAATAT TATACGCAAG GCGACAAGGT GCTGATGCCG
      AAAAGTGGTA CCCGTTTATA ATATGCGTTC CGCTGTTCCA CGACTACGGC

2201  CTGGCGATTC AGGTTCATCA TGCCGTCTGT GATGGCTTCC ATGTCGGCAG
      GACCGCTAAG TCCAAGTAGT ACGGCAGACA CTACCGAAGG TACAGCCGTC

2251  AATGCTTAAT GAATTACAAC AGTACTGCGA TGAGTGGCAG GGCGGGGCGT
      TTACGAATTA CTTAATGTTG TCATGACGCT ACTCACCGTC CCGCCCCGCA

2301  AATTTTTTTA AGGCAGTTAT TGGTGCCCTT AAACGCCTGG TGCTACGCCT
      TTAAAAAAAT TCCGTCAATA ACCACGGGAA TTTGCGGACC ACGATGCGGA

2351  GAATAAGTGA TAATAAGCGG ATGAATGGCA GAAATTCGAA AGCAAATTCG
      CTTATTCACT ATTATTCGCC TACTTACCGT CTTTAAGCTT TCGTTTAAGC

2401  ACCCGGTCGT CGGTTCAGGG CAGGGTCGTT AAATAGCCGC TTATGTCTAT
      TGGGCCAGCA GCCAAGTCCC GTCCCAGCAA TTTATCGGCG AATACAGATA

2451  TGCTGGTTTA CCGGTTTATT GACTACCGGA AGCAGTGTGA CCGTGTGCTT
      ACGACCAAAT GGCCAAATAA CTGATGGCCT TCGTCACACT GGCACACGAA

2501  CTCAAATGCC TGAGGCCAGT TTGCTCAGGC TCTCCCCGTG GAGGTAATAA
      GAGTTTACGG ACTCCGGTCA AACGAGTCCG AGAGGGGCAC CTCCATTATT
```

Figure 2E


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2551  TTGCTCGACC GATAAAAGCG GCTTCCTGAC AGGAGGCCGT TTTGTTTTGC
      AACGAGCTGG CTATTTTCGC CGAAGGACTG TCCTCCGGCA AAACAAAACG

2601  AGCCCACCTC AACGCAATTA ATGTGAGTTA GCTCACTCAT TAGGCACCCC
      TCGGGTGGAG TTGCGTTAAT TACACTCAAT CGAGTGAGTA ATCCGTGGGG

2651  AGGCTTTACA CTTTATGCTT CCGGCTCGTA TGTTGTGTGG AATTGTGAGC
      TCCGAAATGT GAAATACGAA GGCCGAGCAT ACAACACACC TTAACACTCG

2701  GGATAACAAT TTCACACAGG AAACAGCTAT GACCATGATT ACGAATTTCT
      CCTATTGTTA AAGTGTGTCC TTTGTCGATA CTGGTACTAA TGCTTAAAGA

2751  AGATAACGAG GGCAAATCAT GAAAAAGACA GCTATCGCGA TTGCAGTGGC
      TCTATTGCTC CCGTTTAGTA CTTTTTCTGT CGATAGCGCT AACGTCACCG

2801  ACTGGCTGGT TTCGCTACCG TAGCGCAGGC CGACTACAAA GATATCGTTA
      TGACCGACCA AAGCGATGGC ATCGCGTCCG GCTGATGTTT CTATAGCAAT

2851  TGACCCAGTC ACCGTCCTCC CTGACCGTTA CCGCTGGTGA AAAAGTTACC
      ACTGGGTCAG TGGCAGGAGG GACTGGCAAT GGCGACCACT TTTTCAATGG

2901  ATGTCCTGCA CCTCCTCCCA GTCCCTGTTC AACTCCGGTA AACAGAAAAA
      TACAGGACGT GGAGGAGGGT CAGGGACAAG TTGAGGCCAT TTGTCTTTTT

2951  CTACCTGACC TGGTATCAGC AGAAACCGGG TCAGCCACCG AAAGTTCTGA
      GATGGACTGG ACCATAGTCG TCTTTGGCCC AGTCGGTGGC TTTCAAGACT

3001  TCTACTGGGC TTCCACCCGT GAATCCGGTG TTCCAGACCG TTTCACCGGT
      AGATGACCCG AAGGTGGGCA CTTAGGCCAC AAGGTCTGGC AAAGTGGCCA

3051  TCCGGTTCCG GCACCGACTT CACCCTGACC ATCTCCTCCG TTCAGGCTGA
      AGGCCAAGGC CGTGGCTGAA GTGGGACTGG TAGAGGAGGC AAGTCCGACT

3101  AGACCTGGCT GTTTACTACT GCCAGAACGA CTACTCCAAC CCACTGACCT
      TCTGGACCGA CAAATGATGA CGGTCTTGCT GATGAGGTTG GGTGACTGGA

3151  TCGGTGGTGG CACCAAACTG GAACTTAAGC GCGCTGGTGG TGGAGGGTCT
      AGCCACCACC GTGGTTTGAC CTTGAATTCG CGCGACCACC ACCTCCCAGA

                                    BamHI
                                    ~~~~~~
3201  GGAGGAGGTG GGAGTGGGGG AGGTGGATCC GGCGGGGGAG GTTCAGGGGG
      CCTCCTCCAC CCTCACCCCC TCCACCTAGG CCGCCCCCTC CAAGTCCCCC

3251  TGGCGGTAGT GGAGGGGGCG GTTCAGAAGT TCAACTAGTT GAATCCGGTG
      ACCGCCATCA CCTCCCCCGC CAAGTCTTCA AGTTGATCAA CTTAGGCCAC

3301  GTGACCTGGT TAAACCGGGT GGTTCCCTGA AACTGTCCTG CGCTGCTTCC
      CACTGGACCA ATTTGGCCCA CCAAGGGACT TTGACAGGAC GCGACGAAGG
```

Figure 2F


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3351  GGTTTCTCCT TCTCCTCCTA CGGTATGTCC TGGGTTCGTC AGACCCCGGA
      CCAAAGAGGA AGAGGAGGAT GCCATACAGG ACCCAAGCAG TCTGGGGCCT

3401  CAAACGTCTG GAATGGGTTG CTACCATCTC CAACGGTGGT GGTTACACCT
      GTTTGCAGAC CTTACCCAAC GATGGTAGAG GTTGCCACCA CCAATGTGGA

3451  ACTACCCGGA CTCCGTTAAA GGTCGTTTCA CCATCTCCCG TGACAACGCT
      TGATGGGCCT GAGGCAATTT CCAGCAAAGT GGTAGAGGGC ACTGTTGCGA

                        PstI
                      ~~~~~~~
3501  AAAAACACCC TGTACCTGCA GATGTCCTCC CTGAAATCCG AAGACTCAGC
      TTTTTGTGGG ACATGGACGT CTACAGGAGG GACTTTAGGC TTCTGAGTCG

3551  TATGTACTAC TGCGCTCGTC GTGAACGTTA CGACGAAAAC GGTTTCGCTT
      ATACATGATG ACGCGAGCAG CACTTGCAAT GCTGCTTTTG CCAAAGCGAA

                                                    EcoRI
                                                   ~~~~~~
3601  ACTGGGGTCA GGGTACCCTG GTTACCGTTT CAGCTTCCGG AGAATTCGAG
      TGACCCCAGT CCCATGGGAC CAATGGCAAA GTCGAAGGCC TCTTAAGCTC

         AvaI
        ~~~~~~
3651  GCCTCGGGGG CCGAGGGCGG CGGTTCTGGT TCCGGTGATT TTGATTATGA
      CGGAGCCCCC GGCTCCCGCC GCCAAGACCA AGGCCACTAA AACTAATACT

3701  AAAAATGGCA AACGCTAATA AGGGGGCTAT GACCGAAAAT GCCGATGAAA
      TTTTTACCGT TTGCGATTAT TCCCCCGATA CTGGCTTTTA CGGCTACTTT

3751  ACGCGCTACA GTCTGACGCT AAAGGCAAAC TTGATTCTGT CGCTACTGAT
      TGCGCGATGT CAGACTGCGA TTTCCGTTTG AACTAAGACA GCGATGACTA

                      ClaI
                     ~~~~~~
3801  TACGGTGCTG CTATCGATGG TTTCATTGGT GACGTTTCCG GCCTTGCTAA
      ATGCCACGAC GATAGCTACC AAAGTAACCA CTGCAAAGGC CGGAACGATT

3851  TGGTAATGGT GCTACTGGTG ATTTTGCTGG CTCTAATTCC CAAATGGCTC
      ACCATTACCA CGATGACCAC TAAAACGACC GAGATTAAGG GTTTACCGAG

3901  AAGTCGGTGA CGGTGATAAT TCACCTTTAA TGAATAATTT CCGTCAATAT
      TTCAGCCACT GCCACTATTA AGTGGAAATT ACTTATTAAA GGCAGTTATA

3951  TTACCTTCCC TCCCTCAATC GGTTGAATGT CGCCCTTTTG TCTTTGGCGC
      AATGGAAGGG AGGGAGTTAG CCAACTTACA GCGGGAAAAC AGAAACCGCG

4001  TGGTAAACCA TATGAATTTT CTATTGATTG TGACAAAATA AACTTATTCC
      ACCATTTGGT ATACTTAAAA GATAACTAAC ACTGTTTTAT TTGAATAAGG

4051  GTGGTGTCTT TGCGTTTCTT TTATATGTTG CCACCTTTAT GTATGTATTT
      CACCACAGAA ACGCAAAGAA AATATACAAC GGTGGAAATA CATACATAAA
```

Figure 2G

HindIII
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4101  TCTACGTTTG CTAACATACT GCGTAATAAG GAGTCTTGAT AAGCTTCGAG
      AGATGCAAAC GATTGTATGA CGCATTATTC CTCAGAACTA TTCGAAGCTC

4151  AAATTCACCT CGAAAGCAAG CTGATAAACC GATACAATTA AAGGCTCCTT
      TTTAAGTGGA GCTTTCGTTC GACTATTTGG CTATGTTAAT TTCCGAGGAA

                            EcoRI
                            ~~~~~~
4201  TTGGAGCCTT TTTTTTTGGA GAATTCAATC ATGCCAGTTC TTTTGGGTAT
      AACCTCGGAA AAAAAAACCT CTTAAGTTAG TACGGTCAAG AAAACCCATA

4251  TCCGTTATTA TTGCGTTTCC TCGGTTTCCT TCTGGTAACT TTGTTCGGCT
      AGGCAATAAT AACGCAAAGG AGCCAAAGGA AGACCATTGA AACAAGCCGA

4301  ATCTGCTTAC TTTCCTTAAA AAGGGCTTCG GTAAGATAGC TATTGCTATT
      TAGACGAATG AAAGGAATTT TTCCCGAAGC CATTCTATCG ATAACGATAA

4351  TCATTGTTTC TTGCTCTTAT TATTGGGCTT AACTCAATTC TTGTGGGTTA
      AGTAACAAAG AACGAGAATA ATAACCCGAA TTGAGTTAAG AACACCCAAT

4401  TCTCTCTGAT ATTAGCGCAC AATTACCCTC TGATTTTGTT CAGGGCGTTC
      AGAGAGACTA TAATCGCGTG TTAATGGGAG ACTAAAACAA GTCCCGCAAG

4451  AGTTAATTCT CCCGTCTAAT GCGCTTCCCT GTTTTTATGT TATTCTCTCT
      TCAATTAAGA GGGCAGATTA CGCGAAGGGA CAAAAATACA ATAAGAGAGA

4501  GTAAAGGCTG CTATTTTCAT TTTTGACGTT AAACAAAAAA TCGTTTCTTA
      CATTTCCGAC GATAAAAGTA AAAACTGCAA TTTGTTTTTT AGCAAAGAAT

4551  TTTGGATTGG GATAAATAAA TATGGCTGTT TATTTTGTAA CTGGCAAATT
      AAACCTAACC CTATTTATTT ATACCGACAA ATAAAACATT GACCGTTTAA

4601  AGGCTCTGGA AAGACGCTCG TTAGCGTTGG TAAGATTCAG GATAAAATTG
      TCCGAGACCT TTCTGCGAGC AATCGCAACC ATTCTAAGTC CTATTTTAAC

4651  TAGCTGGGTG CAAAATAGCA ACTAATCTTG ATTTAAGGCT TCAAAACCTC
      ATCGACCCAC GTTTTATCGT TGATTAGAAC TAAATTCCGA AGTTTTGGAG

4701  CCGCAAGTCG GGAGGTTCGC TAAAACGCCT CGCGTTCTTA GAATACCGGA
      GGCGTTCAGC CCTCCAAGCG ATTTTGCGGA GCGCAAGAAT CTTATGGCCT

4751  TAAGCCTTCT ATTTCTGATT TGCTTGCTAT TGGTCGTGGT AATGATTCCT
      ATTCGGAAGA TAAAGACTAA ACGAACGATA ACCAGCACCA TTACTAAGGA

4801  ACGACGAAAA TAAAAACGGT TTGCTTGTTC TTGATGAATG CGGTACTTGG
      TGCTGCTTTT ATTTTTGCCA AACGAACAAG AACTACTTAC GCCATGAACC

4851  TTTAATACCC GTTCATGGAA TGACAAGGAA AGACAGCCGA TTATTGATTG
      AAATTATGGG CAAGTACCTT ACTGTTCCTT TCTGTCGGCT AATAACTAAC
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## Figure 2H



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4901  GTTTCTTCAT GCTCGTAAAT TGGGATGGGA TATTATTTTT CTTGTTCAGG
      CAAAGAAGTA CGAGCATTTA ACCCTACCCT ATAATAAAAA GAACAAGTCC

4951  ATTTATCTAT TGTTGATAAA CAGGCGCGTT CTGCATTAGC TGAACACGTT
      TAAATAGATA ACAACTATTT GTCCGCGCAA GACGTAATCG ACTTGTGCAA

5001  GTTTATTGTC GCCGTCTGGA CAGAATTACT TTACCCTTTG TCGGCACTTT
      CAAATAACAG CGGCAGACCT GTCTTAATGA AATGGGAAAC AGCCGTGAAA

5051  ATATTCTCTT GTTACTGGCT CAAAAATGCC TCTGCCTAAA TTACATGTTG
      TATAAGAGAA CAATGACCGA GTTTTTACGG AGACGGATTT AATGTACAAC

5101  GTGTTGTTAA ATATGGTGAT TCTCAATTAA GCCCTACTGT TGAGCGTTGG
      CACAACAATT TATACCACTA AGAGTTAATT CGGGATGACA ACTCGCAACC

5151  CTTTATACTG GTAAGAATTT ATATAACGCA TATGACACTA AACAGGCTTT
      GAAATATGAC CATTCTTAAA TATATTGCGT ATACTGTGAT TTGTCCGAAA

5201  TTCCAGTAAT TATGATTCAG GTGTTTATTC ATATTTAACC CCTTATTTAT
      AAGGTCATTA ATACTAAGTC CACAAATAAG TATAAATTGG GGAATAAATA

5251  CACACGGTCG GTATTTCAAA CCATTAAATT TAGGTCAGAA GATGAAATTA
      GTGTGCCAGC CATAAAGTTT GGTAATTTAA ATCCAGTCTT CTACTTTAAT

5301  ACTAAAATAT ATTTGAAAAA GTTTTCTCGC GTTCTTTGTC TTGCGATAGG
      TGATTTTATA TAAACTTTTT CAAAAGAGCG CAAGAAACAG AACGCTATCC

5351  ATTTGCATCA GCATTTACAT ATAGTTATAT AACCCAACCT AAGCCGGAGG
      TAAACGTAGT CGTAAATGTA TATCAATATA TTGGGTTGGA TTCGGCCTCC

5401  TTAAAAAGGT AGTCTCTCAG ACCTATGATT TTGATAAATT CACTATTGAC
      AATTTTTCCA TCAGAGAGTC TGGATACTAA AACTATTTAA GTGATAACTG

5451  TCTTCTCAGC GTCTTAATCT AAGCTATCGC TATGTTTTCA AGGATTCTAA
      AGAAGAGTCG CAGAATTAGA TTCGATAGCG ATACAAAAGT TCCTAAGATT

5501  GGGAAAATTA ATTAATAGCG ACGATTTACA GAAGCAAGGT TATTCCATCA
      CCCTTTTAAT TAATTATCGC TGCTAAATGT CTTCGTTCCA ATAAGGTAGT

5551  CATATATTGA TTTATGTACT GTTTCAATTA AAAAAGGTAA TTCAAATGAA
      GTATATAACT AAATACATGA CAAAGTTAAT TTTTTCCATT AAGTTTACTT

5601  ATTGTTAAAT GTAATTAATT TTGTTTTCTT GATGTTTGTT TCATCATCTT
      TAACAATTTA CATTAATTAA AACAAAAGAA CTACAAACAA AGTAGTAGAA

5651  CTTTTGCTCA AGTAATTGAA ATGAATAATT CGCCTCTGCG CGATTTCGTG
      GAAAACGAGT TCATTAACTT TACTTATTAA GCGGAGACGC GCTAAAGCAC

5701  ACTTGGTATT CAAAGCAAAC AGGTGAATCT GTTATTGTCT CACCTGATGT
      TGAACCATAA GTTTCGTTTG TCCACTTAGA CAATAACAGA GTGGACTACA
```

Figure 2I


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5751  TAAAGGTACA GTGACTGTAT ATTCCTCTGA CGTTAAGCCT GAAAATTTAC
      ATTTCCATGT CACTGACATA TAAGGAGACT GCAATTCGGA CTTTTAAATG

5801  GCAATTTCTT TATCTCTGTT TTACGTGCTA ATAATTTTGA TATGGTTGGC
      CGTTAAAGAA ATAGAGACAA AATGCACGAT TATTAAAACT ATACCAACCG

5851  TCAATTCCTT CCATAATTCA GAAATATAAC CCAAATAGTC AGGATTATAT
      AGTTAAGGAA GGTATTAAGT CTTTATATTG GGTTTATCAG TCCTAATATA

5901  TGATGAATTG CCATCATCTG ATATTCAGGA ATATGATGAT AATTCCGCTC
      ACTACTTAAC GGTAGTAGAC TATAAGTCCT TATACTACTA TTAAGGCGAG

5951  CTTCTGGTGG TTTCTTTGTT CCGCAAAATG ATAATGTTAC TCAAACATTT
      GAAGACCACC AAAGAAACAA GGCGTTTTAC TATTACAATG AGTTTGTAAA

6001  AAAATTAATA ACGTTCGCGC AAAGGATTTA ATAAGGGTTG TAGAATTGTT
      TTTTAATTAT TGCAAGCGCG TTTCCTAAAT TATTCCCAAC ATCTTAACAA

6051  TGTTAAATCT AATACATCTA AATCCTCAAA TGTATTATCT GTTGATGGTT
      ACAATTTAGA TTATGTAGAT TTAGGAGTTT ACATAATAGA CAACTACCAA

6101  CTAACTTATT AGTAGTTAGC GCCCCTAAAG ATATTTTAGA TAACCTTCCG
      GATTGAATAA TCATCAATCG CGGGGATTTC TATAAAATCT ATTGGAAGGC

6151  CAATTTCTTT CTACTGTTGA TTTGCCAACT GACCAGATAT TGATTGAAGG
      GTTAAAGAAA GATGACAACT AAACGGTTGA CTGGTCTATA ACTAACTTCC

6201  ATTAATTTTC GAGGTTCAGC AAGGTGATGC TTTAGATTTT TCCTTTGCTG
      TAATTAAAAG CTCCAAGTCG TTCCACTACG AAATCTAAAA AGGAAACGAC

6251  CTGGCTCTCA GCGCGGCACT GTTGCTGGTG GTGTTAATAC TGACCGTCTA
      GACCGAGAGT CGCGCCGTGA CAACGACCAC CACAATTATG ACTGGCAGAT

6301  ACCTCTGTTT TATCTTCTGC GGGTGGTTCG TTCGGTATTT TTAACGGCGA
      TGGAGACAAA ATAGAAGACG CCCACCAAGC AAGCCATAAA AATTGCCGCT

6351  TGTTTTAGGG CTATCAGTTC GCGCATTAAA GACTAATAGC CATTCAAAAA
      ACAAAATCCC GATAGTCAAG CGCGTAATTT CTGATTATCG GTAAGTTTTT

6401  TATTGTCTGT GCCTCGTATT CTTACGCTTT CAGGTCAGAA GGGTTCTATT
      ATAACAGACA CGGAGCATAA GAATGCGAAA GTCCAGTCTT CCCAAGATAA

6451  TCTGTTGGCC AGAATGTCCC TTTTATTACT GGTCGTGTAA CTGGTGAATC
      AGACAACCGG TCTTACAGGG AAAATAATGA CCAGCACATT GACCACTTAG

6501  TGCCAATGTA AATAATCCAT TTCAGACGGT TGAGCGTCAA AATGTTGGTA
      ACGGTTACAT TTATTAGGTA AAGTCTGCCA ACTCGCAGTT TTACAACCAT

6551  TTTCTATGAG TGTTTTTCCC GTTGCAATGG CTGGCGGTAA TATTGTTTTA
      AAAGATACTC ACAAAAAGGG CAACGTTACC GACCGCCATT ATAACAAAAT
```

Figure 2J


```
6601  GATATAACCA GTAAGGCCGA TAGTTTGAGT TCTTCTACTC AGGCAAGTGA
      CTATATTGGT CATTCCGGCT ATCAAACTCA AGAAGATGAG TCCGTTCACT

6651  TGTTATTACT AATCAAAGAA GTATTGCGAC AACGGTTAAT TTGCGTGATG
      ACAATAATGA TTAGTTTCTT CATAACGCTG TTGCCAATTA AACGCACTAC

6701  GTCAGACTCT TTTGCTCGGT GGCCTCACTG ATTACAAAAA CACTTCTCAA
      CAGTCTGAGA AAACGAGCCA CCGGAGTGAC TAATGTTTTT GTGAAGAGTT

6751  GATTCTGGTG TGCCGTTCCT GTCTAAAATC CCTTTAATCG GCCTCCTGTT
      CTAAGACCAC ACGGCAAGGA CAGATTTTAG GGAAATTAGC CGGAGGACAA

6801  TAGCTCCCGT TCTGATTCTA ACGAGGAAAG CACGTTGTAC GTGCTCGTCA
      ATCGAGGGCA AGACTAAGAT TGCTCCTTTC GTGCAACATG CACGAGCAGT

6851  AAGCAACCAT AGTACGCGCC CTGTAGCGGC GCATTAAGCG CGGCGGGTGT
      TTCGTTGGTA TCATGCGCGG GACATCGCCG CGTAATTCGC GCCGCCCACA

6901  GGTGGTTACG CGCAGCGTGA CCGCTACACT TGCCAGCGCC CTAGCGCCCG
      CCACCAATGC GCGTCGCACT GGCGATGTGA ACGGTCGCGG GATCGCGGGC

6951  CTCCTTTCGC TTTCTTCCCT TCCTTTCTCG CCACGTTCTC CGGCTTTCCC
      GAGGAAAGCG AAAGAAGGGA AGGAAAGAGC GGTGCAAGAG GCCGAAAGGG

                          BamHI
                         --------
7001  CGTCAAGCTC TAAATCGGGG GATCCCTTTA GGGTTCCGAT TTAGTGCTTT
      GCAGTTCGAG ATTTAGCCCC CTAGGGAAAT CCCAAGGCTA AATCACGAAA

7051  ACGGCACCTC GACCTCCAAA AACTTGATTT GGGTGATGGT TCACGTAGTG
      TGCCGTGGAG CTGGAGGTTT TTGAACTAAA CCCACTACCA AGTGCATCAC

7101  GGCCATCGCC CTGATAGACG GTTTTTCGCC CTTTGACGTT GGAGTCCACG
      CCGGTAGCGG GACTATCTGC CAAAAAGCGG GAAACTGCAA CCTCAGGTGC

7151  TTCTTTAATA GTGGACTCTT GTTCCAAACT GGAACAACAC TCACAACTAA
      AAGAAATTAT CACCTGAGAA CAAGGTTTGA CCTTGTTGTG AGTGTTGATT

7201  CTCGGCCTAT TCTTTTGATT TATAAGGATT TTTGTCATTT TCTGCTTACT
      GAGCCGGATA AGAAAACTAA ATATTCCTAA AAACAGTAAA AGACGAATGA

7251  GGTTAAAAAA TAAGCTGATT TAACAAATAT TTAACGCGAA ATTTAACAAA
      CCAATTTTTT ATTCGACTAA ATTGTTTATA AATTGCGCTT TAAATTGTTT

7301  ACATTAACGT TTACAATTTA AATATTTGCT TATACAATCA TCCTGTTTTT
      TGTAATTGCA AATGTTAAAT TTATAAACGA ATATGTTAGT AGGACAAAAA

7351  GGGGCTTTTC TGATTATCAA CCGGGGTACA TATGATTGAC ATGCTAGTTT
      CCCCGAAAAG ACTAATAGTT GGCCCCATGT ATACTAACTG TACGATCAAA
```

Figure 2K

ClaI

```
7401  TACGATTACC GTTCATCGAT TCTCTTGTTT GCTCCAGACT TTCAGGTAAT
      ATGCTAATGG CAAGTAGCTA AGAGAACAAA CGAGGTCTGA AAGTCCATTA

7451  GACCTGATAG CCTTTGTAGA CCTCTCAAAA ATAGCTACCC TCTCCGGCAT
      CTGGACTATC GGAAACATCT GGAGAGTTTT TATCGATGGG AGAGGCCGTA

7501  GAATTTATCA GCTAGAACGG TTGAATATCA TATTGACGGT GATTTGACTG
      CTTAAATAGT CGATCTTGCC AACTTATAGT ATAACTGCCA CTAAACTGAC

7551  TCTCCGGCCT TTCTCACCCG TTTGAATCTT TGCCTACTCA TTACTCCGGC
      AGAGGCCGGA AAGAGTGGGC AAACTTAGAA ACGGATGAGT AATGAGGCCG

7601  ATTGCATTTA AAATATATGA GGGTTCTAAA AATTTTTATC CCTGCGTTGA
      TAACGTAAAT TTTATATACT CCCAAGATTT TTAAAAATAG GGACGCAACT

7651  AATTAAGGCT TCACCAGCAA AAGTATTACA GGGTCATAAT GTTTTTGGTA
      TTAATTCCGA AGTGGTCGTT TTCATAATGT CCCAGTATTA CAAAAACCAT

7701  CAACCGATTT AGCTTTATGC TCTGAGGCTT TATTGCTTAA TTTTGCTAAC
      GTTGGCTAAA TCGAAATACG AGACTCCGAA ATAACGAATT AAAACGATTG

7751  TCTCTGCCTT GCTTGTACGA TTTATTGGAT GTT
      AGAGACGGAA CGAACATGCT AAATAACCTA CAA
```

Figure 3A

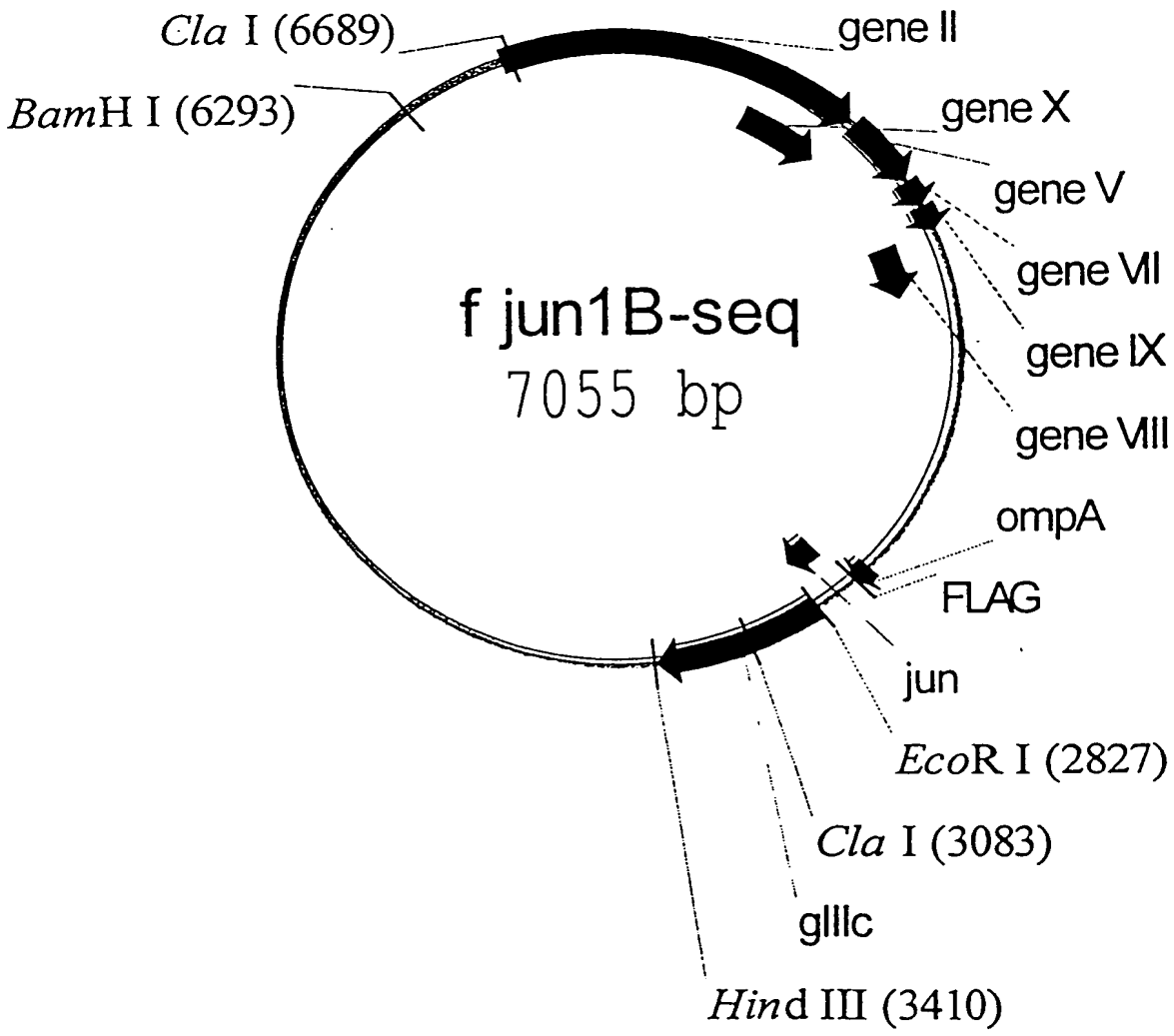
Cla I (6689)
BamH I (6293)
gene II
gene X
gene V
gene VII
gene IX
gene VIII
ompA
FLAG
jun
EcoR I (2827)
Cla I (3083)
gIIIc
Hind III (3410)
f jun1B-seq
7055 bp

Figure 3B


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  1  AACGCTACTA CCATTAGTAG AATTGATGCC ACCTTTTCAG CTCGCGCCCC
     TTGCGATGAT GGTAATCATC TTAACTACGG TGGAAAAGTC GAGCGCGGGG

 51  AAATGAAAAT ATAGCTAAAC AGGTTATTGA CCATTTGCGA AATGTATCTA
     TTTACTTTTA TATCGATTTG TCCAATAACT GGTAAACGCT TTACATAGAT

101  ATGGTCAAAC TAAATCTACT CGTTCGCAGA ATTGGGAATC AACTGTTACA
     TACCAGTTTG ATTTAGATGA GCAAGCGTCT TAACCCTTAG TTGACAATGT

151  TGGAATGAAA CTTCCAGACA CCGTACTTTA GTTGCATATT TAAAACATGT
     ACCTTACTTT GAAGGTCTGT GGCATGAAAT CAACGTATAA ATTTTGTACA

201  TGAACTACAG CACCAGATTC AGCAATTAAG CTCTAAGCCA TCCGCAAAAA
     ACTTGATGTC GTGGTCTAAG TCGTTAATTC GAGATTCGGT AGGCGTTTTT

251  TGACCTCTTA TCAAAAGGAG CAATTAAAGG TACTGTCTAA TCCTGACCTG
     ACTGGAGAAT AGTTTTCCTC GTTAATTTCC ATGACAGATT AGGACTGGAC

301  TTGGAATTTG CTTCCGGTCT GGTTCGCTTT GAGGCTCGAA TTGAAACGCG
     AACCTTAAAC GAAGGCCAGA CCAAGCGAAA CTCCGAGCTT AACTTTGCGC

351  ATATTTGAAG TCTTTCGGGC TTCCTCTTAA TCTTTTTGAT GCAATTCGCT
     TATAAACTTC AGAAAGCCCG AAGGAGAATT AGAAAAACTA CGTTAAGCGA

401  TTGCTTCTGA CTATAATAGA CAGGGTAAAG ACCTGATTTT TGATTTATGG
     AACGAAGACT GATATTATCT GTCCCATTTC TGGACTAAAA ACTAAATACC

451  TCATTCTCGT TTTCTGAACT GTTTAAAGCA TTTGAGGGGG ATTCAATGAA
     AGTAAGAGCA AAAGACTTGA CAAATTTCGT AAACTCCCCC TAAGTTACTT

501  TATTTATGAC GATTCCGCAG TATTGGACGC TATCCAGTCT AAACATTTTA
     ATAAATACTG CTAAGGCGTC ATAACCTGCG ATAGGTCAGA TTTGTAAAAT

551  CAATTACCCC CTCTGGCAAA ACTTCCTTTG CAAAAGCCTC TCGCTATTTT
     GTTAATGGGG GAGACCGTTT TGAAGGAAAC GTTTTCGGAG AGCGATAAAA

601  GGTTTCTATC GTCGTCTGGT TAATGAGGGT TATGATAGTG TTGCTCTTAC
     CCAAAGATAG CAGCAGACCA ATTACTCCCA ATACTATCAC AACGAGAATG

651  CATGCCTCGT AATTCCTTTT GGCGTTATGT ATCTGCATTA GTTGAGTGTG
     GTACGGAGCA TTAAGGAAAA CCGCAATACA TAGACGTAAT CAACTCACAC

701  GTATTCCTAA ATCTCAATTG ATGAATCTTT CCACCTGTAA TAATGTTGTT
     CATAAGGATT TAGAGTTAAC TACTTAGAAA GGTGGACATT ATTACAACAA

751  CCGTTAGTTC GTTTTATTAA CGTAGATTTT TCCTCCCAAC GTCCTGACTG
     GGCAATCAAG CAAAATAATT GCATCTAAAA AGGAGGGTTG CAGGACTGAC

801  GTATAATGAG CCAGTTCTTA AAATCGCATA AGGTAATTCA AAATGATTAA
     CATATTACTC GGTCAAGAAT TTTAGCGTAT TCCATTAAGT TTTACTAATT
```

Figure 3C


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 851  AGTTGAAATT AAACCGTCTC AAGCGCAATT TACTACCCGT TCTGGTGTTT
      TCAACTTTAA TTTGGCAGAG TTCGCGTTAA ATGATGGGCA AGACCACAAA

 901  CTCGTCAGGG CAAGCCTTAT TCACTGAATG AGCAGCTTTG TTACGTTGAT
      GAGCAGTCCC GTTCGGAATA AGTGACTTAC TCGTCGAAAC AATGCAACTA

 951  TTGGGTAATG AATATCCGGT GCTTGTCAAG ATTACTCTCG ACGAAGGTCA
      AACCCATTAC TTATAGGCCA CGAACAGTTC TAATGAGAGC TGCTTCCAGT

1001  GCCAGCGTAT GCGCCTGGTC TGTACACCGT GCATCTGTCC TCGTTCAAAG
      CGGTCGCATA CGCGGACCAG ACATGTGGCA CGTAGACAGG AGCAAGTTTC

1051  TTGGTCAGTT CGGTTCTCTT ATGATTGACC GTCTGCGCCT CGTTCCGGCT
      AACCAGTCAA GCCAAGAGAA TACTAACTGG CAGACGCGGA GCAAGGCCGA

1101  AAGTAACATG GAGCAGGTCG CGGATTTCGA CACAATTTAT CAGGCGATGA
      TTCATTGTAC CTCGTCCAGC GCCTAAAGCT GTGTTAAATA GTCCGCTACT

1151  TACAAATCTC CGTTGTACTT TGTTTCGCGC TTGGTATAAT CGCTGGGGGT
      ATGTTTAGAG GCAACATGAA ACAAAGCGCG AACCATATTA GCGACCCCCA

1201  CAAAGATGAG TGTTTTAGTG TATTCTTTCG CCTCTTTCGT TTTAGGTTGG
      GTTTCTACTC ACAAAATCAC ATAAGAAAGC GGAGAAAGCA AAATCCAACC

1251  TGCCTTCGTA GTGGCATTAC GTATTTTACC CGTTTAATGG AAACTTCCTC
      ACGGAAGCAT CACCGTAATG CATAAAATGG GCAAATTACC TTTGAAGGAG

1301  ATGCGTAAGT CTTTAGTCCT CAAAGCCTCC GTAGCCGTTG CTACCCTCGT
      TACGCATTCA GAAATCAGGA GTTTCGGAGG CATCGGCAAC GATGGGAGCA

1351  TCCGATGCTG TCTTTCGCTG CTGAGGGTGA CGATCCCGCA AAAGCGGCCT
      AGGCTACGAC AGAAAGCGAC GACTCCCACT GCTAGGGCGT TTTCGCCGGA

1401  TTGACTCCCT GCAAGCCTCA GCGACCGAAT ATATCGGTTA TGCGTGGGCG
      AACTGAGGGA CGTTCGGAGT CGCTGGCTTA TATAGCCAAT ACGCACCCGC

1451  ATGGTTGTTG TCATTGTCGG CGCAACTATC GGTATCAAGC TGTTTAAGAA
      TACCAACAAC AGTAACAGCC GCGTTGATAG CCATAGTTCG ACAAATTCTT

1501  ATTCACCTCG AAAGCAAGCT GATAAAGGAG GTTTCTCGAT CGAGACGTTN
      TAAGTGGAGC TTTCGTTCGA CTATTTCCTC CAAAGAGCTA GCTCTGCAAN

1551  NNNGAGGTTC CAACTTTCAC CATAATGAAA TAAGATCACT ACCGGGCGTA
      NNNCTCCAAG GTTGAAAGTG GTATTACTTT ATTCTAGTGA TGGCCCGCAT

1601  TTTTTTGAGT TATCGAGATT TTCAGGAGCT AAGGAAGCTA AAATGGAGAA
      AAAAAACTCA ATAGCTCTAA AAGTCCTCGA TTCCTTCGAT TTTACCTCTT

1651  AAAAATCACT GGATATACCA CCGTTGATAT ATCCCAATGG CATCGTAAAG
      TTTTTAGTGA CCTATATGGT GGCAACTATA TAGGGTTACC GTAGCATTTC
```

Figure 3D


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1701  AACATTTTGA GGCATTTCAG TCAGTTGCTC AATGTACCTA TAACCAGACC
      TTGTAAAACT CCGTAAAGTC AGTCAACGAG TTACATGGAT ATTGGTCTGG

1751  GTTCAGCTGG ATATTACGGC CTTTTTAAAG ACCGTAAAGA AAAATAAGCA
      CAAGTCGACC TATAATGCCG GAAAAATTTC TGGCATTTCT TTTTATTCGT

1801  CAAGTTTTAT CCGGCCTTTA TTCACATTCT TGCCCGCCTG ATGAATGCTC
      GTTCAAAATA GGCCGGAAAT AAGTGTAAGA ACGGGCGGAC TACTTACGAG

1851  ATCCGGAGTT CCGTATGGCA ATGAAAGACG GTGAGCTGGT GATATGGGAT
      TAGGCCTCAA GGCATACCGT TACTTTCTGC CACTCGACCA CTATACCCTA

1901  AGTGTTCACC CTTGTTACAC CGTTTTCCAT GAGCAAACTG AAACGTTTTC
      TCACAAGTGG GAACAATGTG GCAAAAGGTA CTCGTTTGAC TTTGCAAAAG

1951  ATCGCTCTGG AGTGAATACC ACGACGATTT CCGGCAGTTT CTACACATAT
      TAGCGAGACC TCACTTATGG TGCTGCTAAA GGCCGTCAAA GATGTGTATA

2001  ATTCGCAAGA TGTGGCGTGT TACGGTGAAA ACCTGGCCTA TTTCCCTAAA
      TAAGCGTTCT ACACCGCACA ATGCCACTTT TGGACCGGAT AAAGGGATTT

2051  GGGTTTATTG AGAATATGTT TTTCGTCTCA GCCAATCCCT GGGTGAGTTT
      CCCAAATAAC TCTTATACAA AAAGCAGAGT CGGTTAGGGA CCCACTCAAA

2101  CACCAGTTTT GATTTAAACG TAGCCAATAT GGACAACTTC TTCGCCCCCG
      GTGGTCAAAA CTAAATTTGC ATCGGTTATA CCTGTTGAAG AAGCGGGGGC

2151  TTTTCACTAT GGGCAAATAT TATACGCAAG GCGACAAGGT GCTGATGCCG
      AAAAGTGATA CCCGTTTATA ATATGCGTTC CGCTGTTCCA CGACTACGGC

2201  CTGGCGATTC AGGTTCATCA TGCCGTTTGT GATGGCTTCC ATGTCGGCAG
      GACCGCTAAG TCCAAGTAGT ACGGCAAACA CTACCGAAGG TACAGCCGTC

2251  AATGCTTAAT GAATTACAAC AGTACTGCGA TGAGTGGCAG GGCGGGGCGT
      TTACGAATTA CTTAATGTTG TCATGACGCT ACTCACCGTC CCGCCCCGCA

2301  AATTTTTTTA AGGCAGTTAT TGGTGCCCTT AAACGCCTGG TGCTAGCCTG
      TTAAAAAAAT TCCGTCAATA ACCACGGGAA TTTGCGGACC ACGATCGGAC

2351  AGGCCAGTTT GCTCAGGCTC TCCCCGTGGA GGTAATAATT GCTCGACCGA
      TCCGGTCAAA CGAGTCCGAG AGGGGCACCT CCATTATTAA CGAGCTGGCT

2401  TAAAAGCGGC TTCCTGACAG GAGGCCGTTT TGTTTTGCAG CCCACCTCAA
      ATTTTCGCCG AAGGACTGTC CTCCGGCAAA ACAAAACGTC GGGTGGAGTT

2451  CGCAATTAAT GTGAGTTAGC TCACTCATTA GGCACCCCAG GCTTTACACT
      GCGTTAATTA CACTCAATCG AGTGAGTAAT CCGTGGGGTC CGAAATGTGA

2501  TTATGCTTCC GGCTCGTATG TTGTGTGGAA TTGTGAGCGG ATAACAATTT
      AATACGAAGG CCGAGCATAC AACACACCTT AACACTCGCC TATTGTTAAA
```

Figure 3E


```
2551  CACACAGGAA ACAGCTATGA CCATGATTAC GAATTTCTAG ATAACGAGGG
      GTGTGTCCTT TGTCGATACT GGTACTAATG CTTAAAGATC TATTGCTCCC

2601  CAAAAAATGA AAAAGACAGC TATCGCGATT GCAGTGGCAC TGGCTGGTTT
      GTTTTTTACT TTTTCTGTCG ATAGCGCTAA CGTCACCGTG ACCGACCAAA

2651  CGCTACCGTA GCGCAGGCCG ACTACAAAGA TGTCGACGCC GGTGGTCGGA
      GCGATGGCAT CGCGTCCGGC TGATGTTTCT ACAGCTGCGG CCACCAGCCT

2701  TCGCCCGGCT AGAGGAAAAA GTGAAAACCT TGAAAGCGCA AAACTCCGAG
      AGCGGGCCGA TCTCCTTTTT CACTTTTGGA ACTTTCGCGT TTTGAGGCTC

2751  CTGGCGTCCA CGGCCAACAT GCTCAGGGAA CAGGTGGCAC AGCTTAAACA
      GACCGCAGGT GCCGGTTGTA CGAGTCCCTT GTCCACCGTG TCGAATTTGT

                                    EcoRI
                                    -------
2801  GAAAGTCATG AACCACGGTG GTGCCGAATT CAATGCTGGC GGCGGCTCTG
      CTTTCAGTAC TTGGTGCCAC CACGGCTTAA GTTACGACCG CCGCCGAGAC

2851  GTGGTGGTTC TGGTGGCGGC TCTGAGGGTG GTGGCTCTGA GGGTGGCGGT
      CACCACCAAG ACCACCGCCG AGACTCCCAC CACCGAGACT CCCACCGCCA

2901  TCTGAGGGTG GCGGCTCTGA GGGAGGCGGT TCCGGTGGTG GCTCTGGTTC
      AGACTCCCAC CGCCGAGACT CCCTCCGCCA AGGCCACCAC CGAGACCAAG

2951  CGGTGATTTT GATTATGAAA AGATGGCAAA CGCTAATAAG GGGGCTATGA
      GCCACTAAAA CTAATACTTT TCTACCGTTT GCGATTATTC CCCCGATACT

3001  CCGAAAATGC CGATGAAAAC GCGCTACAGT CTGACGCTAA AGGCAAACTT
      GGCTTTTACG GCTACTTTTG CGCGATGTCA GACTGCGATT TCCGTTTGAA

                                          ClaI
                                          ------
3051  GATTCTGTCG CTACTGATTA CGGTGCTGCT ATCGATGGTT TCATTGGTGA
      CTAAGACAGC GATGACTAAT GCCACGACGA TAGCTACCAA AGTAACCACT

3101  CGTTTCCGGC CTTGCTAATG GTAATGGTGC TACTGGTGAT TTTGCTGGCT
      GCAAAGGCCG GAACGATTAC CATTACCACG ATGACCACTA AAACGACCGA

3151  CTAATTCCCA AATGGCTCAA GTCGGTGACG GTGATAATTC ACCTTTAATG
      GATTAAGGGT TTACCGAGTT CAGCCACTGC CACTATTAAG TGGAAATTAC

3201  AATAATTTCC GTCAATATTT ACCTTCCCTC CCTCAATCGG TTGAATGTCG
      TTATTAAAGG CAGTTATAAA TGGAAGGGAG GGAGTTAGCC AACTTACAGC

3251  CCCTTTTGTC TTTAGCGCTG GTAAACCATA TGAATTTTCT ATTGATTGTG
      GGGAAAACAG AAATCGCGAC CATTTGGTAT ACTTAAAAGA TAACTAACAC

3301  ACAAAATAAA CTTATTCCGT GGTGTCTTTG CGTTTCTTTT ATATGTTGCC
      TGTTTTATTT GAATAAGGCA CCACAGAAAC GCAAAGAAAA TATACAACGG
```

Figure 3F


```
3351  ACCTTTATGT ATGTATTTTC TACGTTTGCT AACATACTGC GTAATAAGGA
      TGGAAATACA TACATAAAAG ATGCAAACGA TTGTATGACG CATTATTCCT

              HindIII
              --------
3401  GTCTTGATAA GCTTCGAGAA ATTCACCTCG AAAGCAAGCT GATAAACCGA
      CAGAACTATT CGAAGCTCTT TAAGTGGAGC TTTCGTTCGA CTATTTGGCT

3451  TACAATTAAA GGCTCCTTTT GGAGCCTTTT TTTTTGGAGA ATTAATTCAA
      ATGTTAATTT CCGAGGAAAA CCTCGGAAAA AAAAACCTCT TAATTAAGTT

3501  TCATGCCAGT TCTTTTGGGT ATTCCGTTAT TATTGCGTTT CCTCGGTTTC
      AGTACGGTCA AGAAAACCCA TAAGGCAATA ATAACGCAAA GGAGCCAAAG

3551  CTTCTGGTAA CTTTGTTCGG CTATCTGCTT ACTTTCCTTA AAAAGGGCTT
      GAAGACCATT GAAACAAGCC GATAGACGAA TGAAAGGAAT TTTTCCCGAA

3601  CGGTAAGATA GCTATTGCTA TTTCATTGTT TCTTGCTCTT ATTATTGGGC
      GCCATTCTAT CGATAACGAT AAAGTAACAA AGAACGAGAA TAATAACCCG

3651  TTAACTCAAT TCTTGTGGGT TATCTCTCTG ATATTAGCGC ACAATTACCC
      AATTGAGTTA AGAACACCCA ATAGAGAGAC TATAATCGCG TGTTAATGGG

3701  TCTGATTTTG TTCAGGGCGT TCAGTTAATT CTCCCGTCTA ATGCGCTTCC
      AGACTAAAAC AAGTCCCGCA AGTCAATTAA GAGGGCAGAT TACGCGAAGG

3751  CTGTTTTTAT GTTATTCTCT CTGTAAAGGC TGCTATTTTC ATTTTTGACG
      GACAAAAATA CAATAAGAGA GACATTTCCG ACGATAAAAG TAAAAACTGC

3801  TTAAACAAAA AATCGTTTCT TATTTGGATT GGGATAAATA AATATGGCTG
      AATTTGTTTT TTAGCAAAGA ATAAACCTAA CCCTATTTAT TTATACCGAC

3851  TTTATTTTGT AACTGGCAAA TTAGGCTCTG GAAAGACGCT CGTTAGCGTT
      AAATAAAACA TTGACCGTTT AATCCGAGAC CTTTCTGCGA GCAATCGCAA

3901  GGTAAGATTC AGGATAAAAT TGTAGCTGGG TGCAAAATAG CAACTAATCT
      CCATTCTAAG TCCTATTTTA ACATCGACCC ACGTTTTATC GTTGATTAGA

3951  TGATTTAAGG CTTCAAAACC TCCCGCAAGT CGGGAGGTTC GCTAAAACGC
      ACTAAATTCC GAAGTTTTGG AGGGCGTTCA GCCCTCCAAG CGATTTTGCG

4001  CTCGCGTTCT TAGAATACCG GATAAGCCTT CTATTTCTGA TTTGCTTGCT
      GAGCGCAAGA ATCTTATGGC CTATTCGGAA GATAAAGACT AAACGAACGA

4051  ATTGGTCGTG GTAATGATTC CTACGACGAA AATAAAAACG GTTTGCTTGT
      TAACCAGCAC CATTACTAAG GATGCTGCTT TTATTTTTGC CAAACGAACA

4101  TCTTGATGAA TGCGGTACTT GGTTTAATAC CCGTTCATGG AATGACAAGG
      AGAACTACTT ACGCCATGAA CCAAATTATG GGCAAGTACC TTACTGTTCC
```

Figure 3G


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4151  AAAGACAGCC GATTATTGAT TGGTTTCTTC ATGCTCGTAA ATTGGGATGG
      TTTCTGTCGG CTAATAACTA ACCAAAGAAG TACGAGCATT TAACCCTACC

4201  GATATTATTT TTCTTGTTCA GGATTTATCT ATTGTTGATA AACAGGCGCG
      CTATAATAAA AAGAACAAGT CCTAAATAGA TAACAACTAT TTGTCCGCGC

4251  TTCTGCATTA GCTGAACACG TTGTTTATTG TCGCCGTCTG GACAGAATTA
      AAGACGTAAT CGACTTGTGC AACAAATAAC AGCGGCAGAC CTGTCTTAAT

4301  CTTTACCCTT TGTCGGCACT TTATATTCTC TTGTTACTGG CTCAAAAATG
      GAAATGGGAA ACAGCCGTGA AATATAAGAG AACAATGACC GAGTTTTTAC

4351  CCTCTGCCTA AATTACATGT TGGTGTTGTT AAATATGGTG ATTCTCAATT
      GGAGACGGAT TTAATGTACA ACCACAACAA TTTATACCAC TAAGAGTTAA

4401  AAGCCCTACT GTTGAGCGTT GGCTTTATAC TGGTAAGAAT TTATATAACG
      TTCGGGATGA CAACTCGCAA CCGAAATATG ACCATTCTTA AATATATTGC

4451  CATATGACAC TAAACAGGCT TTTTCCAGTA ATTATGATTC AGGTGTTTAT
      GTATACTGTG ATTTGTCCGA AAAAGGTCAT TAATACTAAG TCCACAAATA

4501  TCATATTTAA CCCCTTATTT ATCACACGGT CGGTATTTCA AACCATTAAA
      AGTATAAATT GGGGAATAAA TAGTGTGCCA GCCATAAAGT TTGGTAATTT

4551  TTTAGGTCAG AAGATGAAAT TAACTAAAAT ATATTTGAAA AAGTTTTCTC
      AAATCCAGTC TTCTACTTTA ATTGATTTTA TATAAACTTT TTCAAAAGAG

4601  GCGTTCTTTG TCTTGCGATA GGATTTGCAT CAGCATTTAC ATATAGTTAT
      CGCAAGAAAC AGAACGCTAT CCTAAACGTA GTCGTAAATG TATATCAATA

4651  ATAACCCAAC CTAAGCCGGA GGTTAAAAAG GTAGTCTCTC AGACCTATGA
      TATTGGGTTG GATTCGGCCT CCAATTTTTC CATCAGAGAG TCTGGATACT

4701  TTTTGATAAA TTCACTATTG ACTCTTCTCA GCGTCTTAAT CTAAGCTATC
      AAAACTATTT AAGTGATAAC TGAGAAGAGT CGCAGAATTA GATTCGATAG

4751  GCTATGTTTT CAAGGATTCT AAGGGAAAAT TAATTAATAG CGACGATTTA
      CGATACAAAA GTTCCTAAGA TTCCCTTTTA ATTAATTATC GCTGCTAAAT

4801  CAGAAGCAAG GTTATTCCAT CACATATATT GATTTATGTA CTGTTTCAAT
      GTCTTCGTTC CAATAAGGTA GTGTATATAA CTAAATACAT GACAAAGTTA

4851  TAAAAAAGGT AATTCAAATG AAATTGTTAA ATGTAATTAA TTTTGTTTTC
      ATTTTTTCCA TTAAGTTTAC TTTAACAATT TACATTAATT AAAACAAAAG

4901  TTGATGTTTG TTTCATCATC TTCTTTTGCT CAAGTAATTG AAATGAATAA
      AACTACAAAC AAAGTAGTAG AAGAAAACGA GTTCATTAAC TTTACTTATT

4951  TTCGCCTCTG CGCGATTTCG TGACTTGGTA TTCAAAGCAA ACAGGTGAAT
      AAGCGGAGAC GCGCTAAAGC ACTGAACCAT AAGTTTCGTT TGTCCACTTA
```

Figure 3H


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5001  CTGTTATTGT CTCACCTGAT GTTAAAGGTA CAGTGACTGT ATATTCCTCT
      GACAATAACA GAGTGGACTA CAATTTCCAT GTCACTGACA TATAAGGAGA

5051  GACGTTAAGC CTGAAAATTT ACGCAATTTC TTTATCTCTG TTTTACGTGC
      CTGCAATTCG GACTTTTAAA TGCGTTAAAG AAATAGAGAC AAAATGCACG

5101  TAATAATTTT GATATGGTTG GCTCAATTCC TTCCATAATT CAGAAATATA
      ATTATTAAAA CTATACCAAC CGAGTTAAGG AAGGTATTAA GTCTTTATAT

5151  ACCCAAATAG TCAGGATTAT ATTGATGAAT TGCCATCATC TGATATTCAG
      TGGGTTTATC AGTCCTAATA TAACTACTTA ACGGTAGTAG ACTATAAGTC

5201  GAATATGATG ATAATTCCGC TCCTTCTGGT GGTTTCTTTG TTCCGCAAAA
      CTTATACTAC TATTAAGGCG AGGAAGACCA CCAAAGAAAC AAGGCGTTTT

5251  TGATAATGTT ACTCAAACAT TTAAAATTAA TAACGTTCGC GCAAAGGATT
      ACTATTACAA TGAGTTTGTA AATTTTAATT ATTGCAAGCG CGTTTCCTAA

5301  TAATAAGGGT TGTAGAATTG TTTGTTAAAT CTAATACATC TAAATCCTCA
      ATTATTCCCA ACATCTTAAC AAACAATTTA GATTATGTAG ATTTAGGAGT

5351  AATGTATTAT CTGTTGATGG TTCTAACTTA TTAGTAGTTA GCGCCCCTAA
      TTACATAATA GACAACTACC AAGATTGAAT AATCATCAAT CGCGGGGATT

5401  AGATATTTTA GATAACCTTC CGCAATTTCT TTCTACTGTT GATTTGCCAA
      TCTATAAAAT CTATTGGAAG GCGTTAAAGA AAGATGACAA CTAAACGGTT

5451  CTGACCAGAT ATTGATTGAA GGATTAATTT TCGAGGTTCA GCAAGGTGAT
      GACTGGTCTA TAACTAACTT CCTAATTAAA AGCTCCAAGT CGTTCCACTA

5501  GCTTTAGATT TTTCCTTTGC TGCTGGCTCT CAGCGCGGCA CTGTTGCTGG
      CGAAATCTAA AAAGGAAACG ACGACCGAGA GTCGCGCCGT GACAACGACC

5551  TGGTGTTAAT ACTGACCGTC TAACCTCTGT TTTATCTTCT GCGGGTGGTT
      ACCACAATTA TGACTGGCAG ATTGGAGACA AAATAGAAGA CGCCCACCAA

5601  CGTTCGGTAT TTTTAACGGC GATGTTTTAG GGCTATCAGT TCGCGCATTA
      GCAAGCCATA AAAATTGCCG CTACAAAATC CCGATAGTCA AGCGCGTAAT

5651  AAGACTAATA GCCATTCAAA AATATTGTCT GTGCCTCGTA TTCTTACGCT
      TTCTGATTAT CGGTAAGTTT TTATAACAGA CACGGAGCAT AAGAATGCGA

5701  TTCAGGTCAG AAGGGTTCTA TTTCTGTTGG CCAGAATGTC CCTTTTATTA
      AAGTCCAGTC TTCCCAAGAT AAAGACAACC GGTCTTACAG GGAAAATAAT

5751  CTGGTCGTGT AACTGGTGAA TCTGCCAATG TAAATAATCC ATTTCAGACG
      GACCAGCACA TTGACCACTT AGACGGTTAC ATTTATTAGG TAAAGTCTGC

5801  GTTGAGCGTC AAAATGTTGG TATTTCTATG AGTGTTTTTC CCGTTGCAAT
      CAACTCGCAG TTTTACAACC ATAAAGATAC TCACAAAAAG GGCAACGTTA
```

Figure 3I


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5851  GGCTGGCGGT AATATTGTTT TAGATATAAC CAGTAAGGCC GATAGTTTGA
      CCGACCGCCA TTATAACAAA ATCTATATTG GTCATTCCGG CTATCAAACT

5901  GTTCTTCTAC TCAGGCAAGT GATGTTATTA CTAATCAAAG AAGTATTGCG
      CAAGAAGATG AGTCCGTTCA CTACAATAAT GATTAGTTTC TTCATAACGC

5951  ACAACGGTTA ATTTGCGTGA TGGTCAGACT CTTTTGCTCG GTGGCCTCAC
      TGTTGCCAAT TAAACGCACT ACCAGTCTGA GAAAACGAGC CACCGGAGTG

6001  TGATTACAAA AACACTTCTC AAGATTCTGG TGTGCCGTTC CTGTCTAAAA
      ACTAATGTTT TTGTGAAGAG TTCTAAGACC ACACGGCAAG GACAGATTTT

6051  TCCCTTTAAT CGGCCTCCTG TTTAGCTCCC GTTCTGATTC TAACGAGGAA
      AGGGAAATTA GCCGGAGGAC AAATCGAGGG CAAGACTAAG ATTGCTCCTT

6101  AGCACGTTGT ACGTGCTCGT CAAAGCAACC ATAGTACGCG CCCTGTAGCG
      TCGTGCAACA TGCACGAGCA GTTTCGTTGG TATCATGCGC GGGACATCGC

6151  GCGCATTAAG CGCGGCGGGT GTGGTGGTTA CGCGCAGCGT GACCGCTACA
      CGCGTAATTC GCGCCGCCCA CACCACCAAT GCGCGTCGCA CTGGCGATGT

6201  CTTGCCAGCG CCCTAGCGCC CGCTCCTTTC GCTTTCTTCC CTTCCTTTCT
      GAACGGTCGC GGGATCGCGG GCGAGGAAAG CGAAAGAAGG GAAGGAAAGA

                                                    BamHI
                                                    ------
6251  CGCCACGTTC TCCGGCTTTC CCCGTCAAGC TCTAAATCGG GGGATCCCTT
      GCGGTGCAAG AGGCCGAAAG GGGCAGTTCG AGATTTAGCC CCCTAGGGAA

6301  TAGGGTTCCG ATTTAGTGCT TTACGGCACC TCGACCTCCA AAAACTTGAT
      ATCCCAAGGC TAAATCACGA AATGCCGTGG AGCTGGAGGT TTTTGAACTA

6351  TTGGGTGATG GTTCACGTAG TGGGCCATCG CCCTGATAGA CGGTTTTTCG
      AACCCACTAC CAAGTGCATC ACCCGGTAGC GGGACTATCT GCCAAAAAGC

6401  CCCTTTGACG TTGGAGTCCA CGTTCTTTAA TAGTGGACTC TTGTTCCAAA
      GGGAAACTGC AACCTCAGGT GCAAGAAATT ATCACCTGAG AACAAGGTTT

6451  CTGGAACAAC ACTCACAACT AACTCGGCCT ATTCTTTTGA TTTATAAGGA
      GACCTTGTTG TGAGTGTTGA TTGAGCCGGA TAAGAAAACT AAATATTCCT

6501  TTTTTGTCAT TTTCTGCTTA CTGGTTAAAA AATAAGCTGA TTTAACAAAT
      AAAAACAGTA AAAGACGAAT GACCAATTTT TTATTCGACT AAATTGTTTA

6551  ATTTAACGCG AAATTTAACA AAACATTAAC GTTTACAATT TAAATATTTG
      TAAATTGCGC TTTAAATTGT TTTGTAATTG CAAATGTTAA ATTTATAAAC

6601  CTTATACAAT CATCCTGTTT TTGGGGCTTT TCTGATTATC AACCGGGGTA
      GAATATGTTA GTAGGACAAA AACCCCGAAA AGACTAATAG TTGGCCCCAT
```

Figure 3J

ClaI

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6651  CATATGATTG ACATGCTAGT TTTACGATTA CCGTTCATCG ATTCTCTTGT
      GTATACTAAC TGTACGATCA AAATGCTAAT GGCAAGTAGC TAAGAGAACA

6701  TTGCTCCAGA CTTTCAGGTA ATGACCTGAT AGCCTTTGTA GACCTCTCAA
      AACGAGGTCT GAAAGTCCAT TACTGGACTA TCGGAAACAT CTGGAGAGTT

6751  AAATAGCTAC CCTCTCCGGC ATGAATTTAT CAGCTAGAAC GGTTGAATAT
      TTTATCGATG GGAGAGGCCG TACTTAAATA GTCGATCTTG CCAACTTATA

6801  CATATTGACG GTGATTTGAC TGTCTCCGGC CTTTCTCACC CGTTTGAATC
      GTATAACTGC CACTAAACTG ACAGAGGCCG GAAAGAGTGG GCAAACTTAG

6851  TTTGCCTACT CATTACTCCG GCATTGCATT TAAAATATAT GAGGGTTCTA
      AAACGGATGA GTAATGAGGC CGTAACGTAA ATTTTATATA CTCCCAAGAT

6901  AAAATTTTTA TCCCTGCGTT GAAATTAAGG CTTCACCAGC AAAAGTATTA
      TTTTAAAAAT AGGGACGCAA CTTTAATTCC GAAGTGGTCG TTTTCATAAT

6951  CAGGGTCATA ATGTTTTTGG TACAACCGAT TTAGCTTTAT GCTCTGAGGC
      GTCCCAGTAT TACAAAAACC ATGTTGGCTA AATCGAAATA CGAGACTCCG

7001  TTTATTGCTT AATTTTGCTA ACTCTCTGCC TTGCTTGTAC GATTTATTGG
      AAATAACGAA TTAAAACGAT TGAGAGACGG AACGAACATG CTAAATAACC

7051  ATGTT
      TACAA
```

Figure 4A

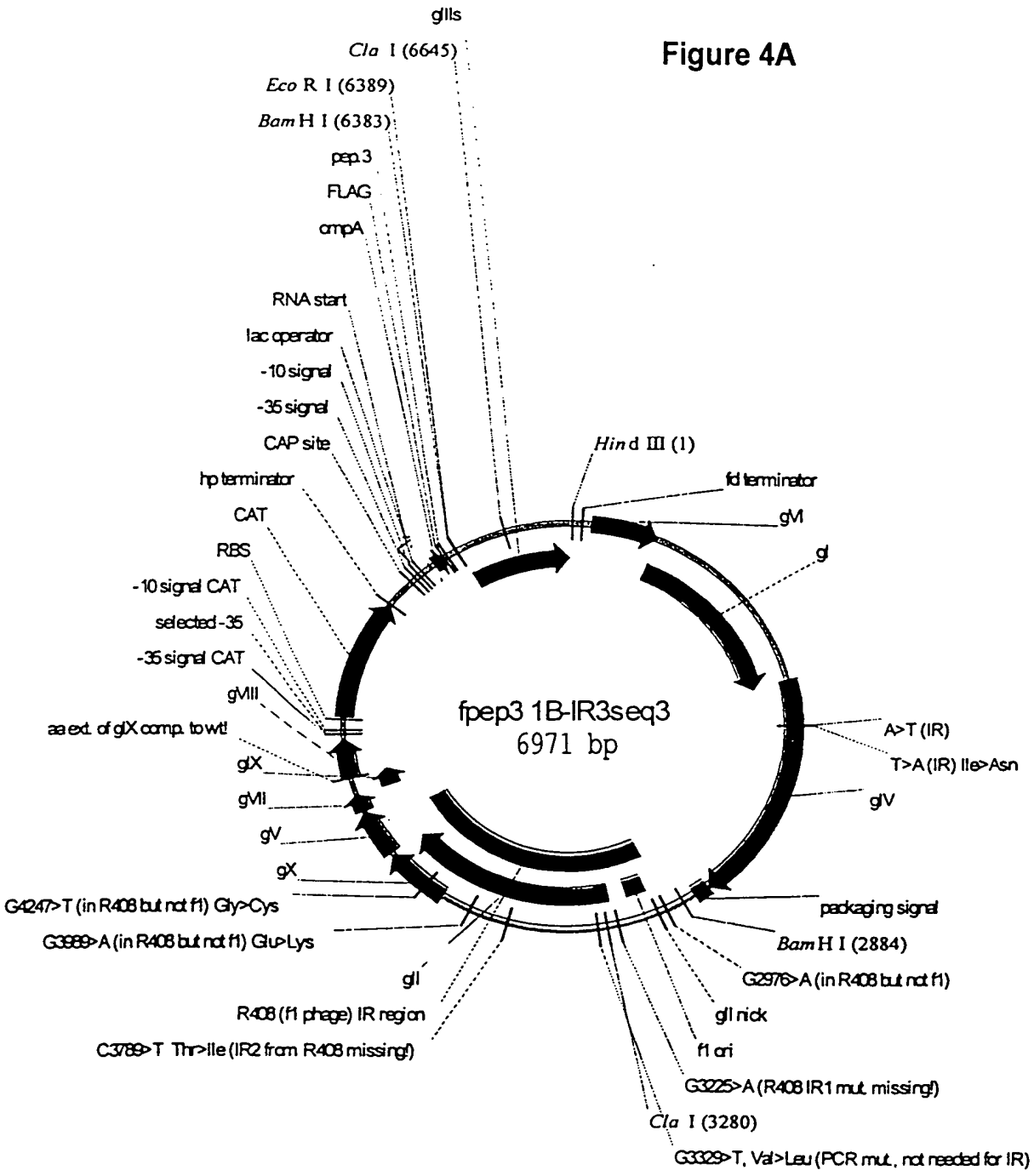
gIIs
Cla I (6645)
Eco R I (6389)
Bam H I (6383)
pep.3
FLAG
ompA
RNA start
lac operator
-10 signal
-35 signal
CAP site
hp terminator
CAT
RBS
-10 signal CAT
selected -35
-35 signal CAT
gVIII
aa ext. of gX comp. to wt
gX
gVII
gV
gX
G4247>T (in R408 but not f1) Gly>Cys
G3989>A (in R408 but not f1) Glu>Lys
gI
R408 (f1 phage) IR region
C3789>T Thr>Ile (IR2 from R408 missing!)
Hind III (1)
fd terminator
gVI
gI
fpep3 1B-IR3seq3
6971 bp
A>T (IR)
T>A (IR) Ile>Asn
gIV
packaging signal
Bam H I (2884)
G2976>A (in R408 but not f1)
gII nick
f1 ori
G3225>A (R408 IR1 mut. missing!)
Cla I (3280)
G3329>T, Val>Leu (PCR mut., not needed for IR)

Figure 4B

HindIII
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   1  AGCTTCGAGA AATTCACCTC GAAAGCAAGC TGATAAACCG ATACAATTAA
      TCGAAGCTCT TTAAGTGGAG CTTTCGTTCG ACTATTTGGC TATGTTAATT

  51  AGGCTCCTTT TGGAGCCTTT TTTTTTGGAG AATTAATTCA ATCATGCCAG
      TCCGAGGAAA ACCTCGGAAA AAAAAACCTC TTAATTAAGT TAGTACGGTC

 101  TTCTTTTGGG TATTCCGTTA TTATTGCGTT TCCTCGGTTT CCTTCTGGTA
      AAGAAAACCC ATAAGGCAAT AATAACGCAA AGGAGCCAAA GGAAGACCAT

 151  ACTTTGTTCG GCTATCTGCT TACTTTCCTT AAAAAGGGCT TCGGTAAGAT
      TGAAACAAGC CGATAGACGA ATGAAAGGAA TTTTTCCCGA AGCCATTCTA

 201  AGCTATTGCT ATTTCATTGT TTCTTGCTCT TATTATTGGG CTTAACTCAA
      TCGATAACGA TAAAGTAACA AAGAACGAGA ATAATAACCC GAATTGAGTT

 251  TTCTTGTGGG TTATCTCTCT GATATTAGCG CACAATTACC CTCTGATTTT
      AAGAACACCC AATAGAGAGA CTATAATCGC GTGTTAATGG GAGACTAAAA

 301  GTTCAGGGCG TTCAGTTAAT TCTCCCGTCT AATGCGCTTC CCTGTTTTTA
      CAAGTCCCGC AAGTCAATTA AGAGGGCAGA TTACGCGAAG GGACAAAAAT

 351  TGTTATTCTC TCTGTAAAGG CTGCTATTTT CATTTTTGAC GTTAAACAAA
      ACAATAAGAG AGACATTTCC GACGATAAAA GTAAAAACTG CAATTTGTTT

 401  AAATCGTTTC TTATTTGGAT TGGGATAAAT AAATATGGCT GTTTATTTTG
      TTTAGCAAAG AATAAACCTA ACCCTATTTA TTTATACCGA CAAATAAAAC

 451  TAACTGGCAA ATTAGGCTCT GGAAAGACGC TCGTTAGCGT TGGTAAGATT
      ATTGACCGTT TAATCCGAGA CCTTTCTGCG AGCAATCGCA ACCATTCTAA

 501  CAGGATAAAA TTGTAGCTGG GTGCAAAATA GCAACTAATC TTGATTTAAG
      GTCCTATTTT AACATCGACC CACGTTTTAT CGTTGATTAG AACTAAATTC

 551  GCTTCAAAAC CTCCCGCAAG TCGGGAGGTT CGCTAAAACG CCTCGCGTTC
      CGAAGTTTTG GAGGGCGTTC AGCCCTCCAA GCGATTTTGC GGAGCGCAAG

 601  TTAGAATACC GGATAAGCCT TCTATTTCTG ATTTGCTTGC TATTGGTCGT
      AATCTTATGG CCTATTCGGA AGATAAAGAC TAAACGAACG ATAACCAGCA

 651  GGTAATGATT CCTACGACGA AAATAAAAAC GGTTTGCTTG TTCTTGATGA
      CCATTACTAA GGATGCTGCT TTTATTTTTG CCAAACGAAC AAGAACTACT

 701  ATGCGGTACT TGGTTTAATA CCCGTTCATG GAATGACAAG GAAAGACAGC
      TACGCCATGA ACCAAATTAT GGGCAAGTAC CTTACTGTTC CTTTCTGTCG

 751  CGATTATTGA TTGGTTTCTT CATGCTCGTA AATTGGGATG GGATATTATT
      GCTAATAACT AACCAAAGAA GTACGAGCAT TTAACCCTAC CCTATAATAA
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Figure 4C


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 801  TTTCTTGTTC AGGATTTATC TATTGTTGAT AAACAGGCGC GTTCTGCATT
      AAAGAACAAG TCCTAAATAG ATAACAACTA TTTGTCCGCG CAAGACGTAA

 851  AGCTGAACAC GTTGTTTATT GTCGCCGTCT GGACAGAATT ACTTTACCCT
      TCGACTTGTG CAACAAATAA CAGCGGCAGA CCTGTCTTAA TGAAATGGGA

 901  TTGTCGGCAC TTTATATTCT CTTGTTACTG GCTCAAAAAT GCCTCTGCCT
      AACAGCCGTG AAATATAAGA GAACAATGAC CGAGTTTTTA CGGAGACGGA

 951  AAATTACATG TTGGTGTTGT TAAATATGGT GATTCTCAAT TAAGCCCTAC
      TTTAATGTAC AACCACAACA ATTTATACCA CTAAGAGTTA ATTCGGGATG

1001  TGTTGAGCGT TGGCTTTATA CTGGTAAGAA TTTATATAAC GCATATGACA
      ACAACTCGCA ACCGAAATAT GACCATTCTT AAATATATTG CGTATACTGT

1051  CTAAACAGGC TTTTTCCAGT AATTATGATT CAGGTGTTTA TTCATATTTA
      GATTTGTCCG AAAAAGGTCA TTAATACTAA GTCCACAAAT AAGTATAAAT

1101  ACCCCTTATT TATCACACGG TCGGTATTTC AAACCATTAA ATTTAGGTCA
      TGGGGAATAA ATAGTGTGCC AGCCATAAAG TTTGGTAATT TAAATCCAGT

1151  GAAGATGAAA TTAACTAAAA TATATTTGAA AAAGTTTTCT CGCGTTCTTT
      CTTCTACTTT AATTGATTTT ATATAAACTT TTTCAAAAGA GCGCAAGAAA

1201  GTCTTGCGAT AGGATTTGCA TCAGCATTTA CATATAGTTA TATAACCCAA
      CAGAACGCTA TCCTAAACGT AGTCGTAAAT GTATATCAAT ATATTGGGTT

1251  CCTAAGCCGG AGGTTAAAAA GGTAGTCTCT CAGACCTATG ATTTTGATAA
      GGATTCGGCC TCCAATTTTT CCATCAGAGA GTCTGGATAC TAAAACTATT

1301  ATTCACTATT GACTCTTCTC AGCGTCTTAA TCTAAGCTAT CGCTATGTTT
      TAAGTGATAA CTGAGAAGAG TCGCAGAATT AGATTCGATA GCGATACAAA

1351  TCAAGGATTC TAAGGGAAAA TTAATTAATA GCGACGATTT ACAGAAGCAA
      AGTTCCTAAG ATTCCCTTTT AATTAATTAT CGCTGCTAAA TGTCTTCGTT

1401  GGTTATTCCA TCACATATAT TGATTTATGT ACTGTTTCAA TTAAAAAAGG
      CCAATAAGGT AGTGTATATA ACTAAATACA TGACAAAGTT AATTTTTTCC

1451  TAATTCAAAT GAAATTGTTA AATGTAATTA ATTTTGTTTT CTTGATGTTT
      ATTAAGTTTA CTTTAACAAT TTACATTAAT TAAAACAAAA GAACTACAAA

1501  GTTTCATCAT CTTCTTTTGC TCAAGTAATT GAAATGAATA ATTCGCCTCT
      CAAAGTAGTA GAAGAAAACG AGTTCATTAA CTTTACTTAT TAAGCGGAGA

1551  GCGCGATTTC GTGACTTGGT ATTCAAAGCA AACAGGTGAA TCTGTTATTG
      CGCGCTAAAG CACTGAACCA TAAGTTTCGT TTGTCCACTT AGACAATAAC

1601  TCTCACCTGA TGTTAAAGGT ACAGTGACTG TATATTCCTC TGACGTTAAG
      AGAGTGGACT ACAATTTCCA TGTCACTGAC ATATAAGGAG ACTGCAATTC
```

Figure 4D


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1651  CCTGAAAATT TACGCAATTT CTTTATCTCT GTTTTACGTG CTAATAATTT
      GGACTTTTAA ATGCGTTAAA GAAATAGAGA CAAAATGCAC GATTATTAAA

1701  TGATATGGTT GGCTCTAATC CTTCCATAAT TCAGAAATAT AACCCAAATA
      ACTATACCAA CCGAGATTAG GAAGGTATTA AGTCTTTATA TTGGGTTTAT

1751  GTCAGGATTA TATTGATGAA TTGCCATCAT CTGATATTCA GGAATATGAT
      CAGTCCTAAT ATAACTACTT AACGGTAGTA GACTATAAGT CCTTATACTA

1801  GATAATTCCG CTCCTTCTGG TGGTTTCTTT GTTCCGCAAA ATGATAATGT
      CTATTAAGGC GAGGAAGACC ACCAAAGAAA CAAGGCGTTT TACTATTACA

1851  TACTCAAACA TTTAAAATTA ATAACGTTCG CGCAAAGGAT TTAATAAGGG
      ATGAGTTTGT AAATTTTAAT TATTGCAAGC GCGTTTCCTA AATTATTCCC

1901  TTGTAGAATT GTTTGTTAAA TCTAATACAT CTAAATCCTC AAATGTATTA
      AACATCTTAA CAAACAATTT AGATTATGTA GATTTAGGAG TTTACATAAT

1951  TCTGTTGATG GTTCTAACTT ATTAGTAGTT AGCGCCCCTA AAGATATTTT
      AGACAACTAC CAAGATTGAA TAATCATCAA TCGCGGGGAT TTCTATAAAA

2001  AGATAACCTT CCGCAATTTC TTTCTACTGT TGATTTGCCA ACTGACCAGA
      TCTATTGGAA GGCGTTAAAG AAAGATGACA ACTAAACGGT TGACTGGTCT

2051  TATTGATTGA AGGATTAATT TTCGAGGTTC AGCAAGGTGA TGCTTTAGAT
      ATAACTAACT TCCTAATTAA AAGCTCCAAG TCGTTCCACT ACGAAATCTA

2101  TTTTCCTTTG CTGCTGGCTC TCAGCGCGGC ACTGTTGCTG GTGGTGTTAA
      AAAAGGAAAC GACGACCGAG AGTCGCGCCG TGACAACGAC CACCACAATT

2151  TACTGACCGT CTAACCTCTG TTTTATCTTC TGCGGGTGGT TCGTTCGGTA
      ATGACTGGCA GATTGGAGAC AAAATAGAAG ACGCCCACCA AGCAAGCCAT

2201  TTTTTAACGG CGATGTTTTA GGGCTATCAG TTCGCGCATT AAAGACTAAT
      AAAAATTGCC GCTACAAAAT CCCGATAGTC AAGCGCGTAA TTTCTGATTA

2251  AGCCATTCAA AAATATTGTC TGTGCCTCGT ATTCTTACGC TTTCAGGTCA
      TCGGTAAGTT TTTATAACAG ACACGGAGCA TAAGAATGCG AAAGTCCAGT

2301  GAAGGGTTCT ATTTCTGTTG GCCAGAATGT CCCTTTTATT ACTGGTCGTG
      CTTCCCAAGA TAAAGACAAC CGGTCTTACA GGGAAAATAA TGACCAGCAC

2351  TAACTGGTGA ATCTGCCAAT GTAAATAATC CATTTCAGAC AATTGAGCGT
      ATTGACCACT TAGACGGTTA CATTTATTAG GTAAAGTCTG TTAACTCGCA

2401  CAAAATGTTG GTATTTCTAT GAGTGTTTTT CCCGTTGCAA TGGCTGGCGG
      GTTTTACAAC CATAAAGATA CTCACAAAAA GGGCAACGTT ACCGACCGCC

2451  TAATATTGTT TTAGATATAA CCAGTAAGGC CGATAGTTTG AGTTCTTCTA
      ATTATAACAA AATCTATATT GGTCATTCCG GCTATCAAAC TCAAGAAGAT
```

Figure 4E


```
2501  CTCAGGCAAG TGATGTTATT ACTAATCAAA GAAGTATTGC GACAACGGTT
      GAGTCCGTTC ACTACAATAA TGATTAGTTT CTTCATAACG CTGTTGCCAA

2551  AATTTGCGTG ATGGTCAGAC TCTTTTGCTC GGTGGCCTCA CTGATTACAA
      TTAAACGCAC TACCAGTCTG AGAAAACGAG CCACCGGAGT GACTAATGTT

2601  AAACACTTCT CAAGATTCTG GTGTGCCGTT CCTGTCTAAA ATCCCTTTAA
      TTTGTGAAGA GTTCTAAGAC CACACGGCAA GGACAGATTT TAGGGAAATT

2651  TCGGCCTCCT GTTTAGCTCC CGTTCTGATT CTAACGAGGA AAGCACGTTG
      AGCCGGAGGA CAAATCGAGG GCAAGACTAA GATTGCTCCT TTCGTGCAAC

2701  TACGTGCTCG TCAAAGCAAC CATAGTACGC GCCCTGTAGC GGCGCATTAA
      ATGCACGAGC AGTTTCGTTG GTATCATGCG CGGGACATCG CCGCGTAATT

2751  GCGCGGCGGG TGTGGTGGTT ACGCGCAGCG TGACCGCTAC ACTTGCCAGC
      CGCGCCGCCC ACACCACCAA TGCGCGTCGC ACTGGCGATG TGAACGGTCG

2801  GCCCTAGCGC CCGCTCCTTT CGCTTTCTTC CCTTCCTTTC TCGCCACGTT
      CGGGATCGCG GGCGAGGAAA GCGAAAGAAG GGAAGGAAAG AGCGGTGCAA

                                          BamHI
                                          ------
2851  CTCCGGCTTT CCCCGTCAAG CTCTAAATCG GGGGATCCCT TTAGGGTTCC
      GAGGCCGAAA GGGGCAGTTC GAGATTTAGC CCCCTAGGGA AATCCCAAGG

2901  GATTTAGTGC TTTACGGCAC CTCGACCTCC AAAAACTTGA TTTGGGTGAT
      CTAAATCACG AAATGCCGTG GAGCTGGAGG TTTTTGAACT AAACCCACTA

2951  GGTTCACGTA GTGGGCCATC GCCCTAATAG ACGGTTTTTC GCCCTTTGAC
      CCAAGTGCAT CACCCGGTAG CGGGATTATC TGCCAAAAAG CGGGAAACTG

3001  GTTGGAGTCC ACGTTCTTTA ATAGTGGACT CTTGTTCCAA ACTGGAACAA
      CAACCTCAGG TGCAAGAAAT TATCACCTGA GAACAAGGTT TGACCTTGTT

3051  CACTCAACCC TATCTCGGTC TATTCTTTTG ATTTATAAGG GATTTTGCCG
      GTGAGTTGGG ATAGAGCCAG ATAAGAAAAC TAAATATTCC CTAAAACGGC

3101  ATTTCGGCCT ATTGGTTAAA AAATGAGCTG ATTTAACAAA AATTTAACGC
      TAAAGCCGGA TAACCAATTT TTTACTCGAC TAAATTGTTT TTAAATTGCG

3151  GAATTTTAAC AAAATATTAA CGTTTACAAT TTAAATATTT GCTTATACAA
      CTTAAAATTG TTTTATAATT GCAAATGTTA AATTTATAAA CGAATATGTT

3201  TCTTCCTGTT TTTGGGGCTT TTCTGATTAT CAACCGGGGT ACATATGATT
      AGAAGGACAA AAACCCCGAA AAGACTAATA GTTGGCCCCA TGTATACTAA

                                       ClaI
                                       -------
3251  GACATGCTAG TTTTACGATT ACCGTTCATC GATTCTCTTG TTTGCTCCAG
      CTGTACGATC AAAATGCTAA TGGCAAGTAG CTAAGAGAAC AAACGAGGTC
```

Figure 4F


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3301  ACTCTCAGGC AATGACCTGA TAGCCTTTTT AGACCTCTCA AAAATAGCTA
      TGAGAGTCCG TTACTGGACT ATCGGAAAAA TCTGGAGAGT TTTTATCGAT

3351  CCCTCTCCGG CATGAATTTA TCAGCTAGAA CGGTTGAATA TCATATTGAT
      GGGAGAGGCC GTACTTAAAT AGTCGATCTT GCCAACTTAT AGTATAACTA

3401  GGTGATTTGA CTGTCTCCGG CCTTTCTCAC CCGTTTGAAT CTTTACCTAC
      CCACTAAACT GACAGAGGCC GGAAAGAGTG GGCAAACTTA GAAATGGATG

3451  ACATTACTCA GGCATTGCAT TTAAAATATA TGAGGGTTCT AAAAATTTTT
      TGTAATGAGT CCGTAACGTA AATTTTATAT ACTCCCAAGA TTTTTAAAAA

3501  ATCCTTGCGT TGAAATAAAG GCTTCTCCCG CAAAAGTATT ACAGGGTCAT
      TAGGAACGCA ACTTTATTTC CGAAGAGGGC GTTTTCATAA TGTCCCAGTA

3551  AATGTTTTTG GTACAACCGA TTTAGCTTTA TGCTCTGAGG CTTTATTGCT
      TTACAAAAAC CATGTTGGCT AAATCGAAAT ACGAGACTCC GAAATAACGA

3601  TAATTTTGCT AATTCTTTGC CTTGCCTGTA TGATTTATTG GATGTTAACG
      ATTAAAACGA TTAAGAAACG GAACGGACAT ACTAAATAAC CTACAATTGC

3651  CTACTACTAT TAGTAGAATT GATGCCACCT TTTCAGCTCG CGCCCCAAAT
      GATGATGATA ATCATCTTAA CTACGGTGGA AAAGTCGAGC GCGGGGTTTA

3701  GAAAATATAG CTAAACAGGT TATTGACCAT TTGCGAAATG TATCTAATGG
      CTTTTATATC GATTTGTCCA ATAACTGGTA AACGCTTTAC ATAGATTACC

3751  TCAAACTAAA TCTACTCGTT CGCAGAATTG GGAATCAACT GTTACATGGA
      AGTTTGATTT AGATGAGCAA GCGTCTTAAC CCTTAGTTGA CAATGTACCT

3801  ATGAAACTTC CAGACACCGT ACTTTAGTTG CATATTTAAA ACATGTTGAG
      TACTTTGAAG GTCTGTGGCA TGAAATCAAC GTATAAATTT TGTACAACTC

3851  CTACAGCACC AGATCCAGCA ATTAAGCTCT AAGCCATCCG CAAAAATGAC
      GATGTCGTGG TCTAGGTCGT TAATTCGAGA TTCGGTAGGC GTTTTTACTG

3901  CTCTTATCAA AAGGAGCAAT TAAAGGTACT CTCTAATCCT GACCTGTTGG
      GAGAATAGTT TTCCTCGTTA ATTTCCATGA GAGATTAGGA CTGGACAACC

3951  AGTTTGCTTC CGGTCTGGTT CGCTTTGAAG CTCGAATTAA AACGCGATAT
      TCAAACGAAG GCCAGACCAA GCGAAACTTC GAGCTTAATT TTGCGCTATA

4001  TTGAAGTCTT TCGGGCTTCC TCTTAATCTT TTTGATGCAA TCCGCTTTGC
      AACTTCAGAA AGCCCGAAGG AGAATTAGAA AAACTACGTT AGGCGAAACG

4051  TTCTGACTAT AATAGTCAGG GTAAAGACCT GATTTTTGAT TTATGGTCAT
      AAGACTGATA TTATCAGTCC CATTTCTGGA CTAAAAACTA AATACCAGTA

4101  TCTCGTTTTC TGAACTGTTT AAAGCATTTG AGGGGGATTC AATGAATATT
      AGAGCAAAAG ACTTGACAAA TTTCGTAAAC TCCCCCTAAG TTACTTATAA
```

Figure 4G


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4151  TATGACGATT CCGCAGTATT GGACGCTATC CAGTCTAAAC ATTTTACTAT
      ATACTGCTAA GGCGTCATAA CCTGCGATAG GTCAGATTTG TAAAATGATA

4201  TACCCCCTCT GGCAAAACTT CTTTTGCAAA AGCCTCTCGC TATTTTTGTT
      ATGGGGGAGA CCGTTTTGAA GAAAACGTTT TCGGAGAGCG ATAAAAACAA

4251  TTTATCGTCG TCTGGTAAAC GAGGGTTATG ATAGTGTTGC TCTTACTATG
      AAATAGCAGC AGACCATTTG CTCCCAATAC TATCACAACG AGAATGATAC

4301  CCTCGTAATT CCTTTTGGCG TTATGTATCT GCATTAGTTG AATGTGGTAT
      GGAGCATTAA GGAAAACCGC AATACATAGA CGTAATCAAC TTACACCATA

4351  TCCTAAATCT CAACTGATGA ATCTTTCTAC CTGTAATAAT GTTGTTCCGT
      AGGATTTAGA GTTGACTACT TAGAAAGATG GACATTATTA CAACAAGGCA

4401  TAGTTCGTTT TATTAACGTA GATTTTTCTT CCCAACGTCC TGACTGGTAT
      ATCAAGCAAA ATAATTGCAT CTAAAAAGAA GGGTTGCAGG ACTGACCATA

4451  AATGAGCCAG TTCTTAAAAT CGCATAAGGT AATTCACAAT GATTAAAGTT
      TTACTCGGTC AAGAATTTTA GCGTATTCCA TTAAGTGTTA CTAATTTCAA

4501  GAAATTAAAC CATCTCAAGC GCAATTCACT ACCCGTTCTG GTGTTTCTCG
      CTTTAATTTG GTAGAGTTCG CGTTAAGTGA TGGGCAAGAC CACAAAGAGC

4551  TCAGGGCAAG CCTTATTCAC TGAATGAGCA GCTTTGTTAC GTTGATTTGG
      AGTCCCGTTC GGAATAAGTG ACTTACTCGT CGAAACAATG CAACTAAACC

4601  GTAATGAATA TCCGGTGCTT GTCAAGATTA CTCTTGATGA AGGTCAGCCA
      CATTACTTAT AGGCCACGAA CAGTTCTAAT GAGAACTACT TCCAGTCGGT

4651  GCCTATGCGC CTGGTCTGTA CACCGTGCAT CTGTCCTCGT TCAAAGTTGG
      CGGATACGCG GACCAGACAT GTGGCACGTA GACAGGAGCA AGTTTCAACC

4701  TCAGTTCGGT TCTCTTATGA TTGACCGTCT GCGCCTCGTT CCGGCTAAGT
      AGTCAAGCCA AGAGAATACT AACTGGCAGA CGCGGAGCAA GGCCGATTCA

4751  AACATGGAGC AGGTCGCGGA TTTCGACACA ATTTATCAGG CGATGATACA
      TTGTACCTCG TCCAGCGCCT AAAGCTGTGT TAAATAGTCC GCTACTATGT

4801  AATCTCCGTT GTACTTTGTT TCGCGCTTGG TATAATCGCT GGGGGTCAAA
      TTAGAGGCAA CATGAAACAA AGCGCGAACC ATATTAGCGA CCCCCAGTTT

4851  GATGAGTGTT TTAGTGTATT CTTTCGCCTC TTTCGTTTTA GGTTGGTGCC
      CTACTCACAA AATCACATAA GAAAGCGGAG AAAGCAAAAT CCAACCACGG

4901  TTCGTAGTGG CATTACGTAT TTTACCCGTT TAATGGAAAC TTCCTCATGC
      AAGCATCACC GTAATGCATA AAATGGGCAA ATTACCTTTG AAGGAGTACG

4951  GTAAGTCTTT AGTCCTCAAA GCCTCCGTAG CCGTTGCTAC CCTCGTTCCG
      CATTCAGAAA TCAGGAGTTT CGGAGGCATC GGCAACGATG GGAGCAAGGC
```

Figure 4H


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5001  ATGCTGTCTT TCGCTGCTGA GGGTGACGAT CCCGCAAAAG CGGCCTTTGA
      TACGACAGAA AGCGACGACT CCCACTGCTA GGGCGTTTTC GCCGGAAACT

5051  CTCCCTGCAA GCCTCAGCGA CCGAATATAT CGGTTATGCG TGGGCGATGG
      GAGGGACGTT CGGAGTCGCT GGCTTATATA GCCAATACGC ACCCGCTACC

5101  TTGTTGTCAT TGTCGGCGCA ACTATCGGTA TCAAGCTGTT TAAGAAATTC
      AACAACAGTA ACAGCCGCGT TGATAGCCAT AGTTCGACAA ATTCTTTAAG

5151  ACCTCGAAAG CAAGCTGATA AAGGAGGTTT CTCGATCGAG ACGTTGGGTG
      TGGAGCTTTC GTTCGACTAT TTCCTCCAAA GAGCTAGCTC TGCAACCCAC

5201  AGGTTCCAAC TTTCACCATA ATGAAATAAG ATCACTACCG GGCGTATTTT
      TCCAAGGTTG AAAGTGGTAT TACTTTATTC TAGTGATGGC CCGCATAAAA

5251  TTGAGTTATC GAGATTTTCA GGAGCTAAGG AAGCTAAAAT GGAGAAAAAA
      AACTCAATAG CTCTAAAAGT CCTCGATTCC TTCGATTTTA CCTCTTTTTT

5301  ATCACTGGAT ATACCACCGT TGATATATCC CAATGGCATC GTAAAGAACA
      TAGTGACCTA TATGGTGGCA ACTATATAGG GTTACCGTAG CATTTCTTGT

5351  TTTTGAGGCA TTTCAGTCAG TTGCTCAATG TACCTATAAC CAGACCGTTC
      AAAACTCCGT AAAGTCAGTC AACGAGTTAC ATGGATATTG GTCTGGCAAG

5401  AGCTGGATAT TACGGCCTTT TTAAAGACCG TAAAGAAAAA TAAGCACAAG
      TCGACCTATA ATGCCGGAAA AATTTCTGGC ATTTCTTTTT ATTCGTGTTC

5451  TTTTATCCGG CCTTTATTCA CATTCTTGCC CGCCTGATGA ATGCTCATCC
      AAAATAGGCC GGAAATAAGT GTAAGAACGG GCGGACTACT TACGAGTAGG

5501  GGAGTTCCGT ATGGCAATGA AAGACGGTGA GCTGGTGATA TGGGATAGTG
      CCTCAAGGCA TACCGTTACT TTCTGCCACT CGACCACTAT ACCCTATCAC

5551  TTCACCCTTG TTACACCGTT TTCCATGAGC AAACTGAAAC GTTTTCATCG
      AAGTGGGAAC AATGTGGCAA AAGGTACTCG TTTGACTTTG CAAAAGTAGC

5601  CTCTGGAGTG AATACCACGA CGATTTCCGG CAGTTTCTAC ACATATATTC
      GAGACCTCAC TTATGGTGCT GCTAAAGGCC GTCAAAGATG TGTATATAAG

5651  GCAAGATGTG GCGTGTTACG GTGAAAACCT GGCCTATTTC CCTAAAGGGT
      CGTTCTACAC CGCACAATGC CACTTTTGGA CCGGATAAAG GGATTTCCCA

5701  TTATTGAGAA TATGTTTTTC GTCTCAGCCA ATCCCTGGGT GAGTTTCACC
      AATAACTCTT ATACAAAAAG CAGAGTCGGT TAGGGACCCA CTCAAAGTGG

5751  AGTTTTGATT TAAACGTAGC CAATATGGAC AACTTCTTCG CCCCCGTTTT
      TCAAAACTAA ATTTGCATCG GTTATACCTG TTGAAGAAGC GGGGGCAAAA

5801  CACTATGGGC AAATATTATA CGCAAGGCGA CAAGGTGCTG ATGCCGCTGG
      GTGATACCCG TTTATAATAT GCGTTCCGCT GTTCCACGAC TACGGCGACC
```

Figure 4I


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5851  CGATTCAGGT TCATCATGCC GTTTGTGATG GCTTCCATGT CGGCAGAATG
      GCTAAGTCCA AGTAGTACGG CAAACACTAC CGAAGGTACA GCCGTCTTAC

5901  CTTAATGAAT TACAACAGTA CTGCGATGAG TGGCAGGGCG GGGCGTAATT
      GAATTACTTA ATGTTGTCAT GACGCTACTC ACCGTCCCGC CCCGCATTAA

5951  TTTTTAAGGC AGTTATTGGT GCCCTTAAAC GCCTGGTGCT AGCCTGAGGC
      AAAAATTCCG TCAATAACCA CGGGAATTTG CGGACCACGA TCGGACTCCG

6001  CAGTTTGCTC AGGCTCTCCC CGTGGAGGTA ATAATTGCTC GACCGATAAA
      GTCAAACGAG TCCGAGAGGG GCACCTCCAT TATTAACGAG CTGGCTATTT

6051  AGCGGCTTCC TGACAGGAGG CCGTTTTGTT TTGCAGCCCA CCTCAACGCA
      TCGCCGAAGG ACTGTCCTCC GGCAAAACAA AACGTCGGGT GGAGTTGCGT

6101  ATTAATGTGA GTTAGCTCAC TCATTAGGCA CCCCAGGCTT TACACTTTAT
      TAATTACACT CAATCGAGTG AGTAATCCGT GGGGTCCGAA ATGTGAAATA

6151  GCTTCCGGCT CGTATGTTGT GTGGAATTGT GAGCGGATAA CAATTTCACA
      CGAAGGCCGA GCATACAACA CACCTTAACA CTCGCCTATT GTTAAAGTGT

6201  CAGGAAACAG CTATGACCAT GATTACGAAT TTCTAGATAA CGAGGGCAAA
      GTCCTTTGTC GATACTGGTA CTAATGCTTA AAGATCTATT GCTCCCGTTT

6251  AAATGAAAAA GACAGCTATC GCGATTGCAG TGGCACTGGC TGGTTTCGCT
      TTTACTTTTT CTGTCGATAG CGCTAACGTC ACCGTGACCG ACCAAAGCGA

6301  ACCGTAGCGC AGGCCGACTA CAAAGATGTC GACTGTATTG TTTATCATGC
      TGGCATCGCG TCCGGCTGAT GTTTCTACAG CTGACATAAC AAATAGTACG

                                          BamHI EcoRI
                                          ------------
6351  TCATTATCTT GTTGCTAAGT GTGGTGGTGG AGGATCCGAA TTCAATGCTG
      AGTAATAGAA CAACGATTCA CACCACCACC TCCTAGGCTT AAGTTACGAC

6401  GCGGCGGCTC TGGTGGTGGT TCTGGTGGCG GCTCTGAGGG TGGTGGCTCT
      CGCCGCCGAG ACCACCACCA AGACCACCGC CGAGACTCCC ACCACCGAGA

6451  GAGGGTGGCG GTTCTGAGGG TGGCGGCTCT GAGGGAGGCG GTTCCGGTGG
      CTCCCACCGC CAAGACTCCC ACCGCCGAGA CTCCCTCCGC CAAGGCCACC

6501  TGGCTCTGGT TCCGGTGATT TTGATTATGA AAAGATGGCA AACGCTAATA
      ACCGAGACCA AGGCCACTAA AACTAATACT TTTCTACCGT TTGCGATTAT

6551  AGGGGGCTAT GACCGAAAAT GCCGATGAAA ACGCGCTACA GTCTGACGCT
      TCCCCCGATA CTGGCTTTTA CGGCTACTTT TGCGCGATGT CAGACTGCGA
```

Figure 4J


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                                                                ClaI
                                                               -------
6601  AAAGGCAAAC TTGATTCTGT CGCTACTGAT TACGGTGCTG CTATCGATGG
      TTTCCGTTTG AACTAAGACA GCGATGACTA ATGCCACGAC GATAGCTACC

6651  TTTCATTGGT GACGTTTCCG GCCTTGCTAA TGGTAATGGT GCTACTGGTG
      AAAGTAACCA CTGCAAAGGC CGGAACGATT ACCATTACCA CGATGACCAC

6701  ATTTTGCTGG CTCTAATTCC CAAATGGCTC AAGTCGGTGA CGGTGATAAT
      TAAAACGACC GAGATTAAGG GTTTACCGAG TTCAGCCACT GCCACTATTA

6751  TCACCTTTAA TGAATAATTT CCGTCAATAT TTACCTTCCC TCCCTCAATC
      AGTGGAAATT ACTTATTAAA GGCAGTTATA AATGGAAGGG AGGGAGTTAG

6801  GGTTGAATGT CGCCCTTTTG TCTTTGGCGC TGGTAAACCA TATGAATTTT
      CCAACTTACA GCGGGAAAAC AGAAACCGCG ACCATTTGGT ATACTTAAAA

6851  CTATTGATTG TGACAAAATA AACTTATTCC GTGGTGTCTT TGCGTTTCTT
      GATAACTAAC ACTGTTTTAT TTGAATAAGG CACCACAGAA ACGCAAAGAA

6901  TTATATGTTG CCACCTTTAT GTATGTATTT TCTACGTTTG CTAACATACT
      AATATACAAC GGTGGAAATA CATACATAAA AGATGCAAAC GATTGTATGA

                        HindIII

6951  GCGTAATAAG GAGTCTTGAT A
      CGCATTATTC CTCAGAACTA T
```

Figure 5

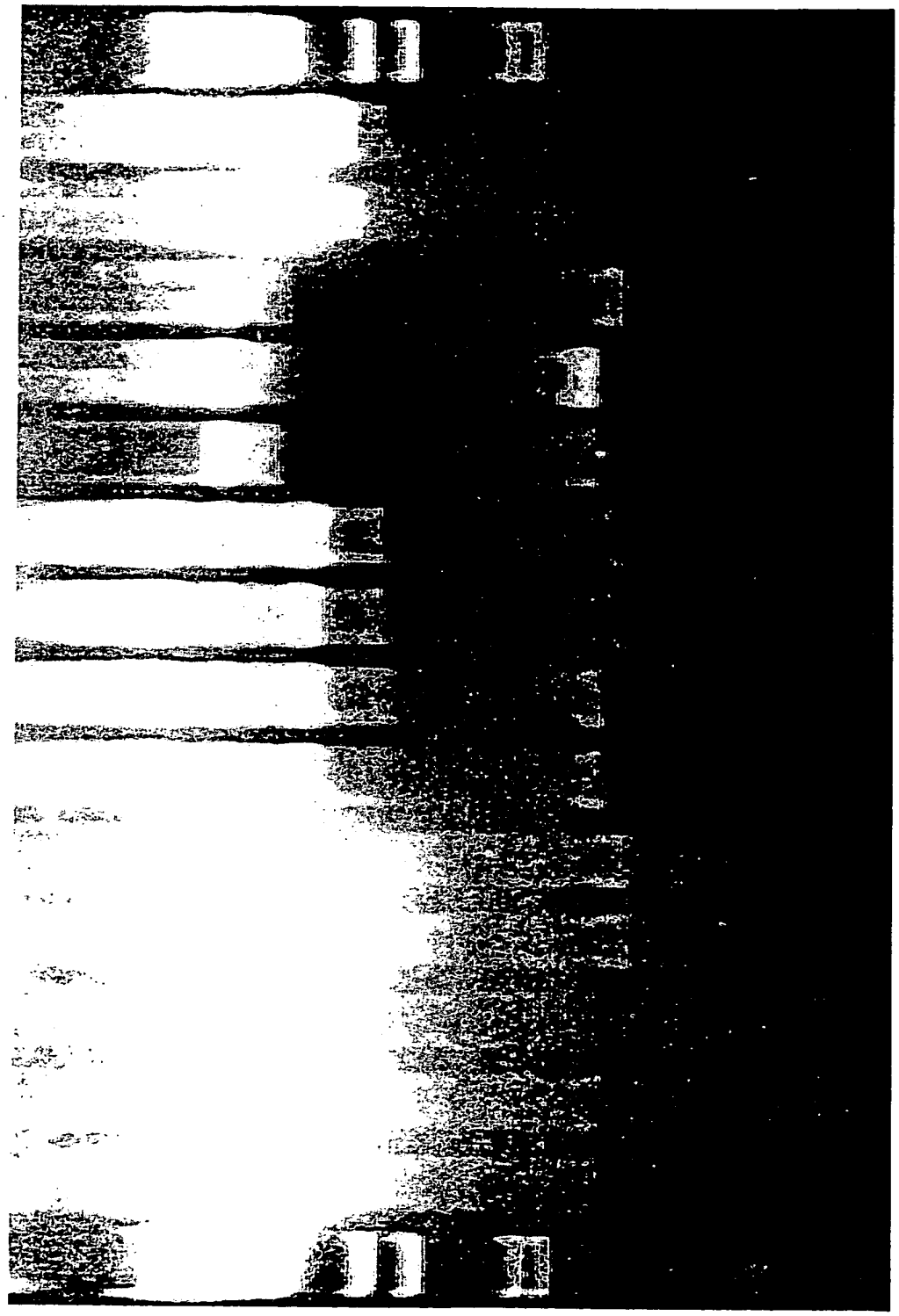

Figure 6

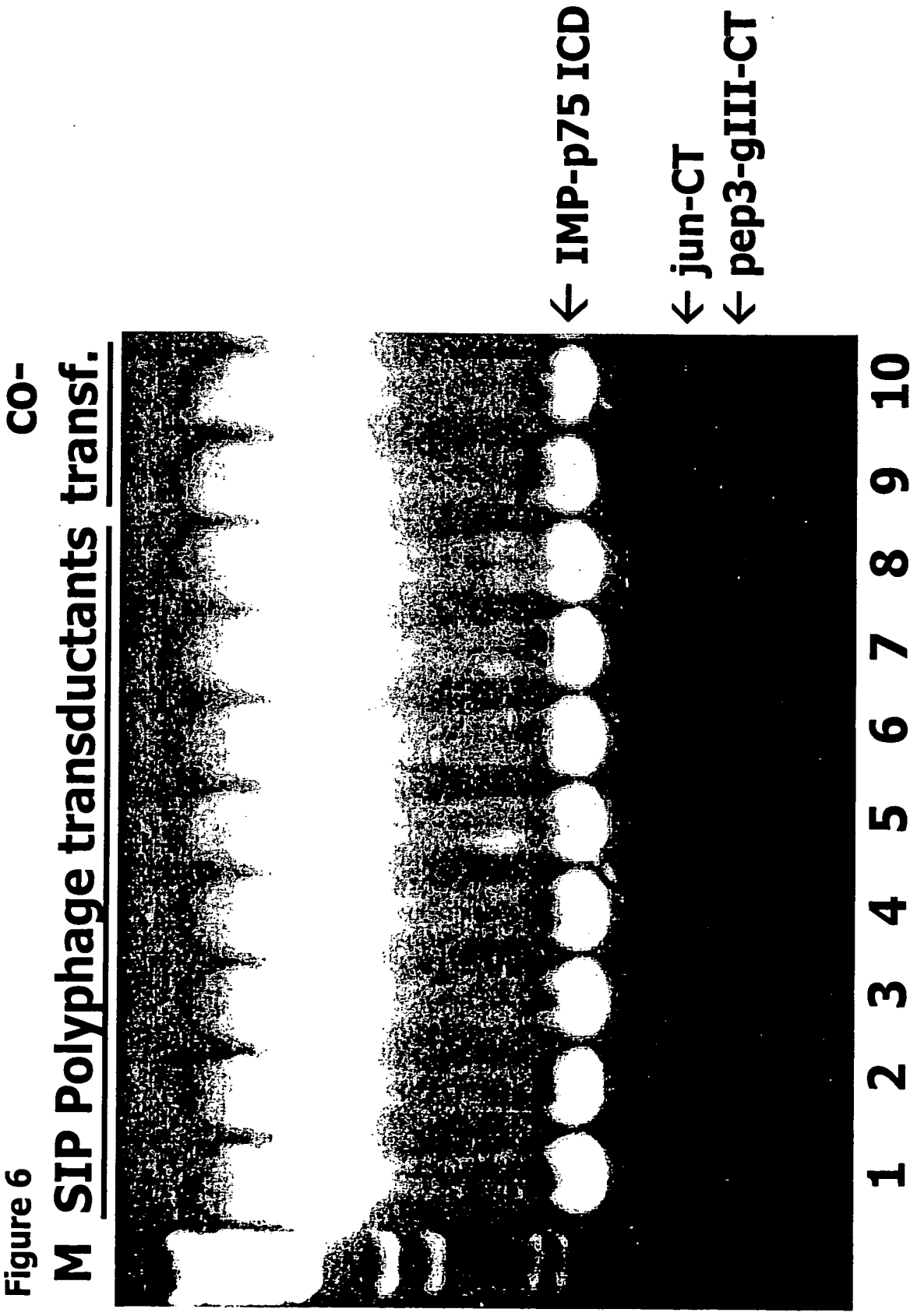
M SIP Polyphage transductants transf.
co-
← IMP-p75 ICD
← jun-CT
← pep3-gIII-CT
1 2 3 4 5 6 7 8 9 10

Figure 7

dilution factor			transductants
pep3/p75ICD		jun/p75ICD	(t.u./ml)*
1	pos. control	-	6×10^5
-	neg. control	1	0
1		10^2	1.2×10^4
1		10^3	8.6×10^2
1		10^4	1.2×10^2
1		10^5	$12^{\#}$
1		10^6	$1.2^{\#}$
1		10^7	$0.12^{\#}$

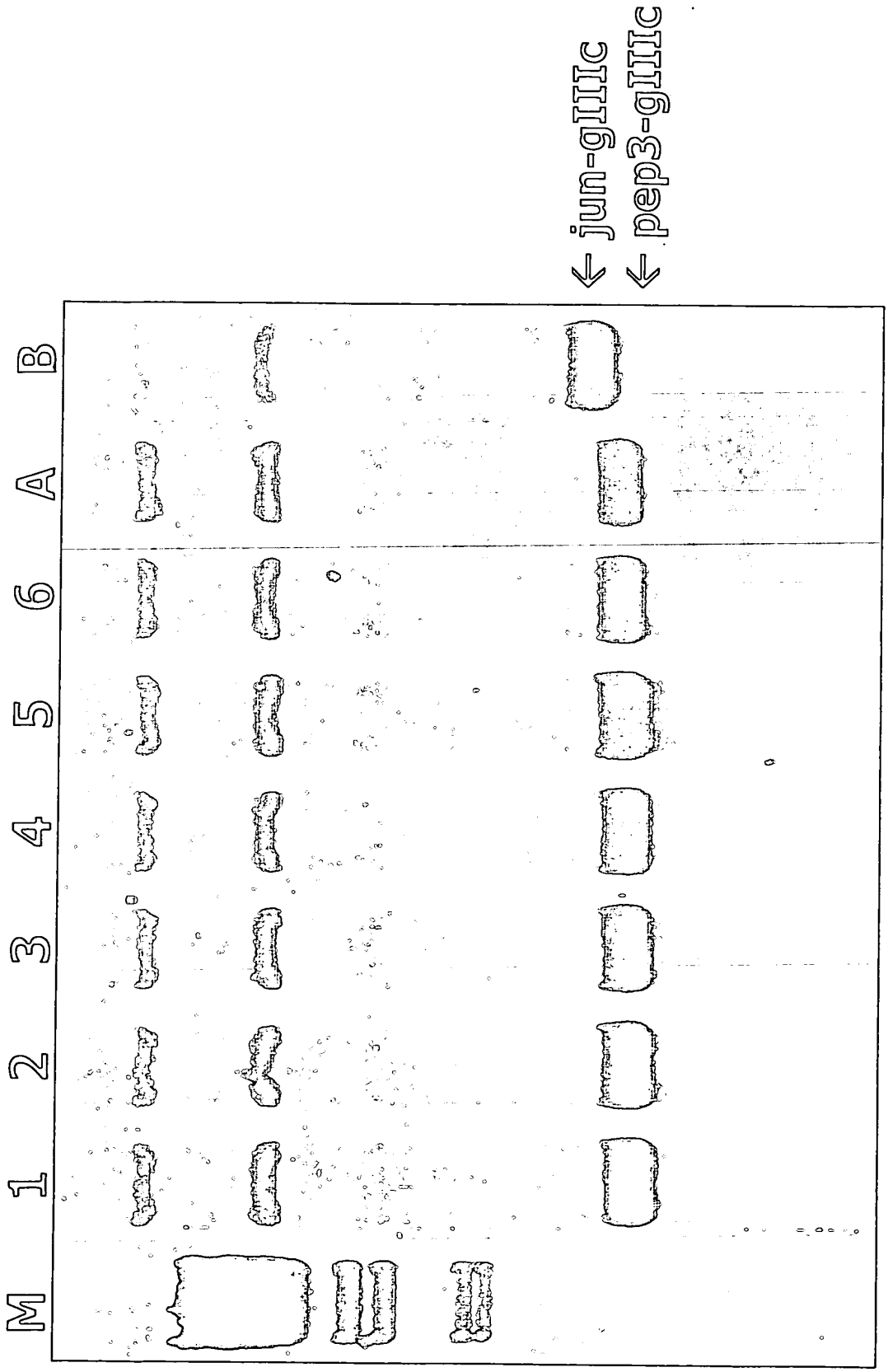

Figure 8

Figure 9

c	a	1	2	a	c	c/a
$1.8x10^2$	$1.2x10^6$	$4.4x10^2$		$1.3x10^6$	$4.2x10^5$	$6.2x10^3$
0	$2.4x10^5$	40		$2.5x10^6$	$8.0x10^5$	10^2
0	$3.7x10^7$	$2.2x10^2$		$2.8x10^5$	$0.6x10^5$	0

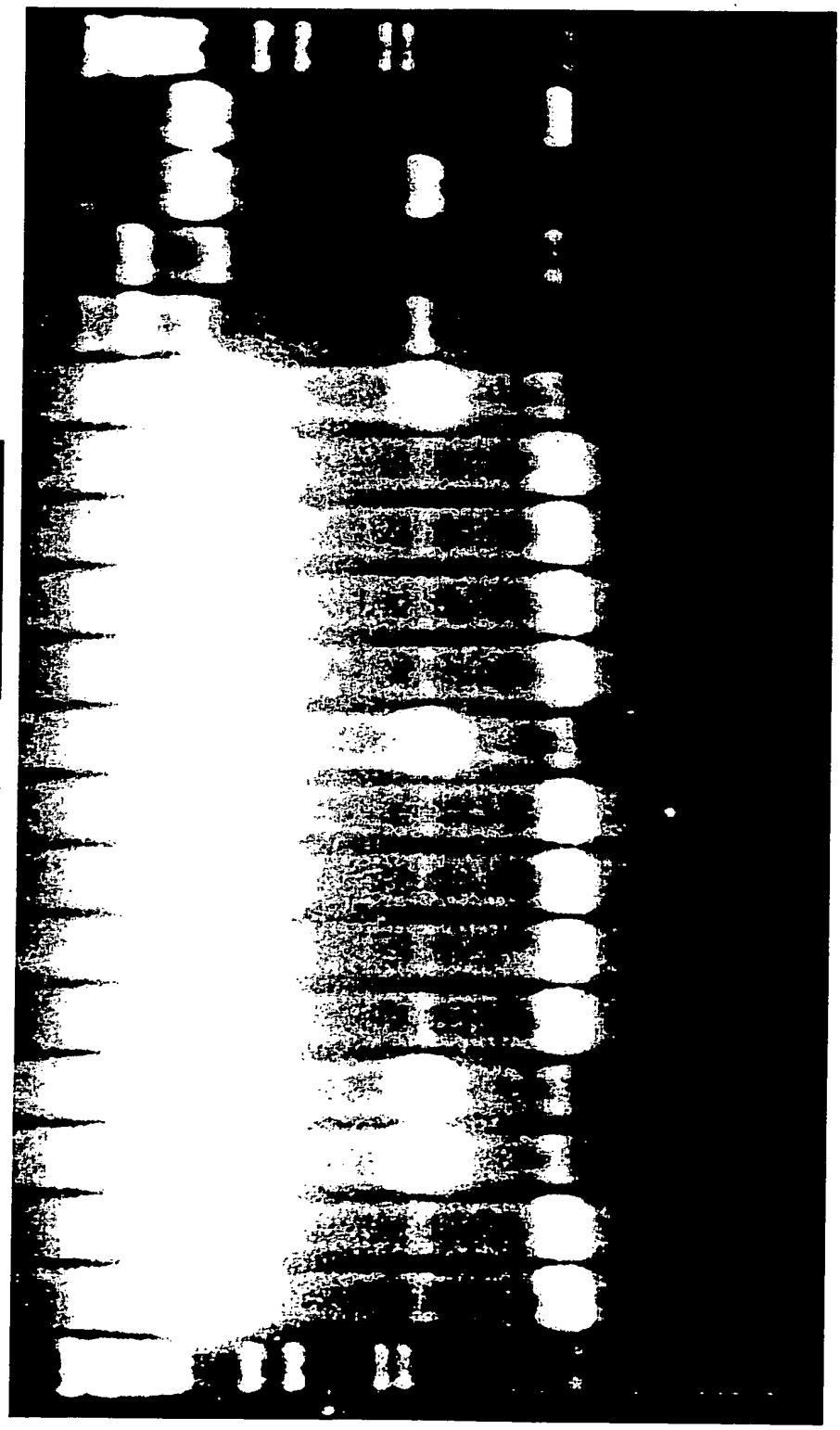

Figure 10